Public Employees Retirement Association of Minnesota

General Employees Retirement Plan
GASB Statements No. 67 and No. 68 Accounting and Financial Reporting for Pensions
June 30, 2022

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November 8, 2022

Public Employees Retirement Association of Minnesota
General Employees Retirement Plan
St. Paul, Minnesota

Dear Trustees of the General Employees Retirement Plan:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the General Employees Retirement Plan, as amended by Statement No. 82. These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust. GASB Statement No. 82 is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The Net Pension Liability is not an appropriate measure for measuring the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligations. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. The calculation of the plan's liability for this report may not be applicable for purposes of funding the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statements No. 67 and No. 68 may produce significantly different results. The information in this report is calculated on a total plan basis. PERA is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the Public Employees Retirement Association (PERA) only in its entirety and only with the permission of PERA. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by PERA, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not audited.

This report complements the actuarial valuation report for funding purposes that was or will be provided to the Plan and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2022 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

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To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the General Employees Retirement Plan as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

This report reflects the impact of COVID-19 through June 30, 2022. It does not reflect the ongoing impact of COVID-19, which is likely to influence demographic and investment experience, at least in the short term. We will continue to monitor these developments and their impact on the plan.

This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

The signing actuaries are independent of the plan sponsor.

Brian B. Murphy, Bonita J. Wurst and Sheryl L. Christensen are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

Brian B. Murphy

Brian B. Murphy, FSA, EA, FCA, MAAA, PhD

Bonita J. Wurst

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Sheryl Christensen

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SECTION A

EXECUTIVE SUMMARY

Executive Summary
as of June 30, 2022 (Dollars in Thousands)

		2022
Actuarial Valuation Date		June 30, 2022
Measurement Date of the Net Pension Liability		June 30, 2022
Employer's Fiscal Year Ending Date (Reporting Date)		Varies by Employer
Membership		
Number of		
- Service Retirements		103,121
- Survivors		9,370
- Disability Retirements		3,489
- Deferred Retirements		68,636
- Terminated Other Non-vested		84,675
- Active Members		149,987
- Total		419,278
Covered Payroll	$	7,042,154
Net Pension Liability		
Total Pension Liability	$	33,954,218
Plan Fiduciary Net Position	$	26,034,185
Net Pension Liability	$	7,920,033
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		76.67%
Net Pension Liability as a Percentage of Covered Payroll		112.47%
Development of the Single Discount Rate		
Single Discount Rate		6.50%
Long-Term Expected Rate of Investment Return		6.50%
Long-Term Municipal Bond Rate*		3.69%
Last year ending June 30 in the 2023 to 2122 projection period for which projected benefit payments are fully-funded		2122
Total Pension Expense/(Income)	$	1,042,859

Deferred Outflows and Inflows by Source Arising from Current and Prior Periods to be Recognized in Future Pension Expenses

		Deferred Outflows of Resources		Deferred Inflows of Resources
Difference between expected and actual experience	$	66,154	$	84,605
Changes in assumptions	$	1,792,447	$	32,213
Net difference between projected and actual earnings on pension plan investments	$	3,163,610	$	3,026,232
Total	$	5,022,211	$	3,143,050

* *Source: Based on the 20-Year Municipal GO Index of mixed maturity general obligation municipal bonds as of the weekly rate closest to but not later than the Measurement Date.*

Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements. Governmental Accounting Standards Board (GASB) Statement No. 82, Pension Issues, is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state or local governments to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to the General Employees Retirement Plan subsequent to the measurement date of June 30, 2022.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position in accordance with GASB Statement No. 67. The *statement of fiduciary net position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *statement of changes in fiduciary net position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

Both GASB Statement No. 67 and No. 68 require the notes of the financial statements for the employers and pension plans, to include certain additional information. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The type of employees and number of members covered by the pension plan;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- The pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- The net pension liability using a discount rate that is 1% higher and 1% lower than used to calculate the total pension liability and net pension liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- The composition of the pension plan's Board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability;
- Information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- Comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. For employer reporting, the net pension liability and pension expense should be measured as of a date (measurement date) no earlier than the end of the employer's prior fiscal year, consistently applied from period to period. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2022 and a measurement date of June 30, 2022.

Measurement of the Net Pension Liability

The net pension liability is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if there are no changes in benefits, Chapter 356 required contributions are made, and all actuarial assumptions are met (including the assumption of the plan earning 7.50% on an actuarial value of assets basis, as prescribed by statutes), then the following outcomes are expected:

1. The normal cost of the plan is expected to remain approximately level as a percent of pay,
2. The funded status of the plan is expected to gradually improve and is expected to be 100% funded within the next 26 years, and
3. The unfunded liability will grow initially as a dollar amount before beginning to decline.

The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the market value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

(1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations; in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.

(2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).

(3) The measurement would produce a different result if the actuarial value of assets were used instead of the market value of assets.

Limitation of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects: (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits); and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.50%; the municipal bond rate is 3.69% (based on the weekly rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"); and the resulting single discount rate is 6.50%. PERA staff selected the long-term expected rate of investment return of 6.50% based on input from GRS that the proposed selection would be reasonable for the purpose of the measurement.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense under GASB Statement No. 68
Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Expense		
1. Service Cost	$	648,767
2. Interest on the Total Pension Liability	$	2,098,002
3. Current-Period Benefit Changes	$	-
4. Employee Contributions (made negative for addition here)	$	(457,740)
5. Projected Earnings on Plan Investments (made negative for addition here)	$	(1,832,058)
6. Pension Plan Administrative Expense	$	13,398
7. Other Changes in Plan Fiduciary Net Position	$	(142)
8. Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		
Arising from Current Reporting Period	$	22,052
9. Recognition of Outflow (Inflow) of Resources due to assumption changes		
Arising from Current Reporting Period	$	18,050
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected (6.50%) and actual earnings on Pension Plan Investments		
Arising from Current Reporting Period	$	716,249
11. **Increase/(Decrease) from Experience in Current Reporting Period**	**$**	**1,226,578**
12. Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		
Arising from Prior Reporting Periods	$	(19,847)
13. Recognition of Outflow (Inflow) of Resources due to assumption changes		
Arising from Prior Reporting Periods	$	806,897
14. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on Pension Plan Investments		
Arising from Prior Reporting Periods	$	(970,769)
15. Total Pension Expense / (Income)	**$**	**1,042,859**

Recognition of Deferred Outflows and Inflows of Resources

Differences between expected and actual experience and changes in assumptions are recognized in pension expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pension through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the current measurement period, the expected remaining service lives of all active employees in the plan was approximately 1,562,654 years. Additionally, the total plan membership (active employees and inactive employees) was 408,613. As a result, the average of the expected remaining service lives for purposes of recognizing the applicable deferred outflows and inflows of resources established in the current measurement period is 4.0000 years (rounded).

Additionally, differences between projected and actual earnings on plan investments should be recognized in pension expense using a systematic and rational method over a closed five-year period. For this purpose, the deferred outflows and inflows of resources are recognized in the pension expense as a level dollar amount over the closed period identified above.

Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Outflows (Inflows) of Resources due to Liabilities		
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$	88,206
2. Assumption Changes (gains) or losses	$	72,199
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		4.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	$	22,052
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$	18,050
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	40,102
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	$	66,154
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	$	54,149
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	120,303
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	3,581,244
2. Recognition period for Assets {in years}		5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	$	716,249
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	2,864,995

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	$ 935,487	$ 108,335	$ 827,152
2. Due to Assets	$ 870,011	$ 1,124,531	$ (254,520)
3. Total	$ 1,805,498	$ 1,232,866	$ 572,632

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	$ 48,288	$ 46,083	$ 2,205
2. Assumption Changes	$ 887,199	$ 62,252	$ 824,947
3. Net Difference between projected and actual earnings on pension plan investments	$ 870,011	$ 1,124,531	$ (254,520)
4. Total	$ 1,805,498	$ 1,232,866	$ 572,632

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	$ 66,154	$ 84,605	$ (18,451)
2. Assumption Changes	$ 1,792,447	$ 32,213	$ 1,760,234
3. Net Difference between projected and actual earnings on pension plan investments	$ 3,163,610	$ 3,026,232	$ 137,378
4. Total	$ 5,022,211	$ 3,143,050	$ 1,879,161

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2023	$ 692,221
2024	$ 723,087
2025	$ (252,395)
2026	$ 716,248
2027	$ -
Thereafter	$ -
Total	$ 1,879,161

Recognition of Deferred Outflows and Inflows of Resources
Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) Due to Differences Between Expected and Actual Experience on Liabilities					
2019	$ 104,946	4.0000	$ 26,236	$ 0	0.0000
2020	$ (30,245)	4.0000	$ (7,561)	$ (7,562)	1.0000
2021	$ (154,087)	4.0000	$ (38,522)	$ (77,043)	2.0000
2022	$ 88,206	4.0000	$ 22,052	$ 66,154	3.0000
Total			**$ 2,205**	**$ (18,451)**	
Deferred Outflow (Inflow) Due to Assumption Changes					
2019	$ (120,162)	4.0000	$ (30,040)	$ 0	0.0000
2020	$ (128,849)	4.0000	$ (32,212)	$ (32,213)	1.0000
2021	$ 3,476,596	4.0000	$ 869,149	$ 1,738,298	2.0000
2022	$ 72,199	4.0000	$ 18,050	$ 54,149	3.0000
Total			**$ 824,947**	**$ 1,760,234**	
Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments					
2018	$ (578,939)	5.0000	$ (115,787)	$ 0	0.0000
2019	$ 44,547	5.0000	$ 8,910	$ 8,910	1.0000
2020	$ 724,261	5.0000	$ 144,852	$ 289,705	2.0000
2021	$ (5,043,720)	5.0000	$ (1,008,744)	$ (3,026,232)	3.0000
2022	$ 3,581,244	5.0000	$ 716,249	$ 2,864,995	4.0000
Total			**$ (254,520)**	**$ 137,378**	
Deferred Outflow (Inflow) Due to All Sources					
Total			**$ 572,632**	**$ 1,879,161**	

Statement of Fiduciary Net Position
(Dollars in Thousands)

	Market Value			
Assets in Trust	**June 30, 2022**		**June 30, 2021**	
Cash, equivalents, short term securities	$	478,533	$	440,891
Fixed income	$	5,965,549	$	6,483,990
Equity	$	13,017,805	$	16,668,905
Private Markets	$	6,547,264	$	4,959,308
Other	$	5,508	$	5,968
Total Assets in Trust	**$**	**26,014,659**	**$**	**28,559,062**
Assets Receivable*	$	30,670	$	40,407
Amounts Payable	$	11,144	$	11,816
Net Position Restricted for Pensions	**$**	**26,034,185**	**$**	**28,587,653**

** Includes Employer Supplemental Contribution receivable to be paid by the City of Minneapolis.*

Statement of Changes in Fiduciary Net Position
(Dollars in Thousands)

Change in Assets		Market Value	
Year Ending		**June 30, 2022**	**June 30, 2021**
1.	Fund balance at market value at beginning of year	$ 28,587,653	$ 22,631,459
2.	Contributions		
	a. Member	$ 457,740	$ 439,488
	b. Employer*	$ 546,291	$ 524,685
	c. Other sources	$ 16,000	$ 16,000
	d. Total contributions	$ 1,020,031	$ 980,173
3.	Investment income		
	a. Investment income/(loss)	$ (1,719,032)	$ 6,739,822
	b. Investment expenses	$ (30,154)	$ (27,112)
	c. Net subtotal	$ (1,749,186)	$ 6,712,710
4.	Other	$ 142	$ 182
5.	**Total additions:** *(2.d.) + (3.c.) + (4.)*	**$ (729,013)**	**$ 7,693,065**
6.	Benefits Paid		
	a. Annuity benefits	$ (1,737,905)	$ (1,666,103)
	b. Refunds	$ (73,152)	$ (58,027)
	c. Total benefits paid	$ (1,811,057)	$ (1,724,130)
7.	Expenses		
	a. Other	$ -	$ -
	b. Administrative	$ (13,398)	$ (12,741)
	c. Total expenses	$ (13,398)	$ (12,741)
8.	**Total deductions:** *(6.c.) + (7.c.)*	**$ (1,824,455)**	**$ (1,736,871)**
9.	Net increase (decrease) in net position: *(5) + (8)*	$ (2,553,468)	$ 5,956,194
10.	**Net position restricted for pensions**	**$ 26,034,185**	**$ 28,587,653**
11.	State Board of Investment calculated investment return[#]	-6.4%	30.3%

** Includes Employer Supplemental Contribution receivable to be paid by the City of Minneapolis.*
[#] Provided by PERA and calculated by the State Board of Investments.

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios
Current Period
Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Total pension liability		
1. Service cost	$	648,767
2. Interest on the total pension liability	$	2,098,002
3. Changes of benefit terms	$	-
4. Difference between expected and actual experience of the total pension liability	$	88,206
5. Changes of assumptions	$	72,199
6. Benefit payments, including refunds of employee contributions	$	(1,811,057)
7. Net change in total pension liability	$	1,096,117
8. Total pension liability – beginning July 1, 2021	$	32,858,101
9. Total pension liability – ending June 30, 2022	**$**	**33,954,218**
B. Plan fiduciary net position		
1. Contributions – employer	$	562,291
2. Contributions – employee	$	457,740
3. Net investment income	$	(1,749,186)
4. Benefit payments, including refunds of employee contributions	$	(1,811,057)
5. Pension Plan administrative expense	$	(13,398)
6. Other	$	142
7. Net change in plan fiduciary net position	$	(2,553,468)
8. Plan fiduciary net position – beginning July 1, 2021	$	28,587,653
9. Plan fiduciary net position – ending June 30, 2022	**$**	**26,034,185**
C. Net pension liability	**$**	**7,920,033**
D. Plan fiduciary net position as a percentage of the total pension liability		**76.67%**
E. Covered-employee payroll^	**$**	**7,042,154**
F. Net pension liability as a percentage of covered-employee payroll		**112.47%**

^ *Assumed equal to actual member contributions divided by employee contribution rate.*

Schedules of Required Supplementary Information
Schedule of Changes in Net Pension Liability and Related Ratios Multiyear
(Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

Fiscal year ending June 30,	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Total Pension Liability										
Service Cost	$ 648,767	$ 530,547	$ 518,112	$ 494,737	$ 513,422	$ 471,706	$ 434,551	$ 421,602	$ 388,391	
Interest on the Total Pension Liability	$ 2,098,002	$ 2,102,259	$ 2,053,793	$ 1,991,061	$ 1,948,853	$ 1,921,869	$ 1,839,388	$ 1,712,534	$ 1,591,756	
Benefit Changes	$ -	$ -	$ (65,850)	$ -	$ (79,217)	$ -	$ -	$ 1,147,198	$ -	
Difference Between Expected and Actual Experience	$ 88,206	$ (154,087)	$ (30,245)	$ 104,946	$ 8,763	$ 280,527	$ (647,197)	$ (348,383)	$ 96,123	
Assumption Changes	$ 72,199	$ 3,476,596	$ (128,849)	$ (120,162)	$ (262,228)	$ (853,320)	$ 2,119,742	$ -	$ 645,499	
Benefit Payments	$ (1,737,905)	$ (1,666,103)	$ (1,604,842)	$ (1,536,071)	$ (1,470,450)	$ (1,413,448)	$ (1,359,176)	$ (1,235,303)	$ (1,109,866)	
Refunds	$ (73,152)	$ (58,027)	$ (84,947)	$ (65,834)	$ (42,589)	$ (37,234)	$ (37,209)	$ (35,655)	$ (38,264)	
Net Change in Total Pension Liability	$ 1,096,117	$ 4,231,185	$ 657,172	$ 868,677	$ 616,554	$ 370,100	$ 2,350,099	$ 1,661,993	$ 1,573,639	
Total Pension Liability - Beginning	$ 32,858,101	$ 28,626,916	$ 27,969,744	$ 27,101,067	$ 26,484,513	$ 26,114,413	$ 23,764,314	$ 22,102,321	$ 20,528,682	
Total Pension Liability - Ending (a)	$ 33,954,218	$ 32,858,101	$ 28,626,916	$ 27,969,744	$ 27,101,067	$ 26,484,513	$ 26,114,413	$ 23,764,314	$ 22,102,321	
Plan Fiduciary Net Position										
Employer Contributions	$ 562,291	$ 540,685	$ 525,821	$ 531,444	$ 504,819	$ 483,888	$ 465,978	$ 435,115	$ 382,251	
Employee Contributions	$ 457,740	$ 439,488	$ 435,419	$ 424,044	$ 409,423	$ 400,204	$ 375,291	$ 353,765	$ 334,495	
Pension Plan Net Investment Income	$ (1,749,186)	$ 6,712,710	$ 931,041	$ 1,547,224	$ 2,063,582	$ 2,682,901	$ (20,851)	$ 777,504	$ 2,760,854	
Benefit Payments	$ (1,737,905)	$ (1,666,103)	$ (1,604,842)	$ (1,536,071)	$ (1,470,450)	$ (1,413,448)	$ (1,359,176)	$ (1,235,303)	$ (1,109,866)	
Refunds	$ (73,152)	$ (58,027)	$ (84,947)	$ (65,834)	$ (42,589)	$ (37,234)	$ (37,209)	$ (35,655)	$ (38,264)	
Pension Plan Administrative Expense	$ (13,398)	$ (12,741)	$ (12,268)	$ (13,470)	$ (11,943)	$ (11,292)	$ (11,350)	$ (10,367)	$ (9,861)	
Other*	$ 142	$ 182	$ 267	$ 154	$ 56	$ 651	$ 431	$ 891,914	$ 605	
Net Change in Plan Fiduciary Net Position	$ (2,553,468)	$ 5,956,194	$ 190,491	$ 887,491	$ 1,452,898	$ 2,105,670	$ (586,886)	$ 1,176,973	$ 2,320,214	
Plan Fiduciary Net Position - Beginning	$ 28,587,653	$ 22,631,459	$ 22,440,968	$ 21,553,477	$ 20,100,579	$ 17,994,909	$ 18,581,795	$ 17,404,822	$ 15,084,608	
Plan Fiduciary Net Position - Ending (b)	$ 26,034,185	$ 28,587,653	$ 22,631,459	$ 22,440,968	$ 21,553,477	$ 20,100,579	$ 17,994,909	$ 18,581,795	$ 17,404,822	
Net Pension Liability - Ending (a) - (b)	$ 7,920,033	$ 4,270,448	$ 5,995,457	$ 5,528,776	$ 5,547,590	$ 6,383,934	$ 8,119,504	$ 5,182,519	$ 4,697,499	
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	76.67 %	87.00 %	79.06 %	80.23 %	79.53 %	75.90 %	68.91 %	78.19 %	78.75 %	
Covered-employee payroll	$ 7,042,154	$ 6,761,354	$ 6,698,754	$ 6,523,754	$ 6,298,815	$ 6,156,985	$ 5,773,708	$ 5,549,255	$ 5,351,920	
Net Pension Liability as a Percentage of covered-employee payroll	112.47 %	63.16 %	89.50 %	84.75 %	88.07 %	103.69 %	140.63 %	93.39 %	87.77 %	

Notes to Schedule:

N/A

** For fiscal year ending June 30, 2017, includes $411 of other income and $240 due to PERA's restatement of the June 30, 2016 end of year plan fiduciary net position.*

Schedules of Required Supplementary Information
Schedule of the Net Pension Liability Multiyear
(Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a % of Covered Payroll
2013						
2014	$ 22,102,321	$ 17,404,822	$ 4,697,499	78.75%	$ 5,351,920	87.77%
2015	$ 23,764,314	$ 18,581,795	$ 5,182,519	78.19%	$ 5,549,255	93.39%
2016	$ 26,114,413	$ 17,994,909	$ 8,119,504	68.91%	$ 5,773,708	140.63%
2017	$ 26,484,513	$ 20,100,579	$ 6,383,934	75.90%	$ 6,156,985	103.69%
2018	$ 27,101,067	$ 21,553,477	$ 5,547,590	79.53%	$ 6,298,815	88.07%
2019	$ 27,969,744	$ 22,440,968	$ 5,528,776	80.23%	$ 6,523,754	84.75%
2020	$ 28,626,916	$ 22,631,459	$ 5,995,457	79.06%	$ 6,698,754	89.50%
2021	$ 32,858,101	$ 28,587,653	$ 4,270,448	87.00%	$ 6,761,354	63.16%
2022	$ 33,954,218	$ 26,034,185	$ 7,920,033	76.67%	$ 7,042,154	112.47%

Schedule of Contributions Multiyear (Dollars in Thousands)

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2013	$ 430,773	$ 372,652	$ 58,121	$ 5,246,928	7.10%
2014	$ 476,321	$ 382,251	$ 94,070	$ 5,351,920	7.14
2015	$ 523,017	$ 435,115	$ 87,902	$ 5,549,255	7.84
2016	$ 542,151	$ 465,978	$ 76,173	$ 5,773,708	8.07
2017	$ 615,083	$ 483,888	$ 131,195	$ 6,156,985	7.86
2018	$ 609,725	$ 504,819	$ 104,906	$ 6,298,815	8.01
2019	$ 453,401	$ 531,444	$ (78,043)	$ 6,523,754	8.15
2020	$ 455,515	$ 525,821	$ (70,306)	$ 6,698,754	7.85
2021	$ 448,278	$ 540,685	$ (92,407)	$ 6,761,354	8.00
2022	$ 368,305	$ 562,291	$ (193,986)	$ 7,042,154	7.98

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Contribution Rates for the Fiscal Year Ending June 30, 2022:

Valuation Date:	June 30, 2021
Notes	Actuarially determined contribution rates are calculated as of each June 30 and apply to the fiscal year beginning on the day after the measurement date.
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	27 years
Asset Valuation Method	5-year smoothed market; no corridor
Inflation	2.25%
Payroll Growth	3.00%
Salary Increases	3.00% to 10.25% including inflation
Investment Rate of Return	7.50%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2020 valuation pursuant to an experience study of the period 2014 - 2019.
Mortality	Pub-2010 General annuitant generational mortality tables, projected with scale MP-2020 from a base year of 2010. Male rates are multiplied by a factor of 1.02 and female rates are multiplied by a factor of 0.90.

Other Information:

Notes	The plan is assumed to pay a 1.25% post retirement benefit increase for all future years. See separate funding report as of June 30, 2021 for additional detail.

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
2013	
2014	18.7 %
2015	4.4
2016	(0.1)
2017	15.2
2018	10.5
2019	7.3
2020	4.3
2021	30.3
2022	(6.4)

[1] *Annual money-weighted rate of return, net of investment expenses.*

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to PERA for GASB-compliance purposes. PERA furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

Rate of Return

For the fiscal year ended June 30, 2022, the annual money-weighted rate of return for the General Employees Retirement Plan was -6.4%. The money-weighted rate of return is a method of calculating period-by-period returns on pension plan investments that adjusts for the changing amounts actually invested. For purposes of this schedule, the money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

Ten-Year Schedule of Money-Weighted Investment Return

Ten-year data is not available. Additional years will be provided when they become available.
To request additional information about the computation of the annual money-weighted rate of return and the investments for the Public Employees Retirement Association of Minnesota (including the investments for PERA' defined benefit retirement funds), contact SBI at 60 Empire Drive, Suite 355, St. Paul, Minnesota, 55103, via email at minn.sbi@state.mn.us or telephone at 651.296.3328.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

Asset Allocation

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Estimates for expected future real rates of return (expected returns, net of inflation) were developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce a geometric, long-term expected rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each major asset class that is included in the pension fund's target asset allocation as of June 30, 2022, these estimates are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (geometric)
Domestic Equity	33.5%	5.10%
International Equity	16.5%	5.30%
Private Markets	25.0%	5.90%
Fixed Income	25.0%	0.75%
Unallocated Cash	0.0%	0.00%
Total	100%	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to PERA for GASB compliance purposes. PERA furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

For purposes of this valuation, the long-term expected rate of return assumption is 6.50%. This assumption is based on a review of inflation and investment return assumptions in our report dated July 12, 2022.

Single Discount Rate

A single discount rate of 6.50% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 6.50%. The projection of cash flows used to determine this single discount rate assumed that plan member, employer, and state contributions will be made at the current statutory contribution rates. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the plan's net pension liability, calculated using a single discount rate of 6.50%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

	1% Decrease 5.50%	Current Single Discount Rate Assumption 6.50%	1% Increase 7.50%
Total Pension Liability	$ 38,544,292	$ 33,954,218	$ 30,189,649
Net Position Restricted for Pensions	$ 26,034,185	$ 26,034,185	$ 26,034,185
Net Pension Liability	**$ 12,510,107**	**$ 7,920,033**	**$ 4,155,464**

Note that we believe the 7.5% interest rate assumption does not comply with Actuarial Standards of Practice.

GASB Statement No. 68 Reconciliation (Dollars in Thousands)
Current Reporting Period

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Current Period: Deferred Outflows	Current Period: Deferred Inflows	Current Period: Pension Expense*
Balance Beginning of Year	**$ 32,858,101**	**$ 28,587,653**	**$ 4,270,448**			
Changes for the Year:						
Service Cost	$ 648,767		$ 648,767			$ 648,767
Interest on Total Pension Liability	$ 2,098,002		$ 2,098,002			$ 2,098,002
Interest on Fiduciary Net Position		$ 1,832,058	$ (1,832,058)			$ (1,832,058)
Changes in Benefit Terms	$ -		$ -			$ -
Liability Experience Gains and Losses	$ 88,206		$ 88,206	$ 66,154	$ -	$ 22,052
Changes in Assumptions	$ 72,199		$ 72,199	$ 54,149	$ -	$ 18,050
Contributions - Employer		$ 562,291	$ (562,291)			$ -
Contributions - Employees		$ 457,740	$ (457,740)			$ (457,740)
Asset Gain/(Loss)		$ (3,581,244)	$ 3,581,244	$ 2,864,995	$ -	$ 716,249
Benefit Payouts	$ (1,811,057)	$ (1,811,057)	$ -			$ -
Administrative Expenses		$ (13,398)	$ 13,398			$ 13,398
Other		$ 142	$ (142)			$ (142)
Net Changes	**$ 1,096,117**	**$ (2,553,468)**	**$ 3,649,585**	**$ 2,985,298**	**$ 0**	**$ 1,226,578**
Balance End of Year	**$ 33,954,218**	**$ 26,034,185**	**$ 7,920,033**			

** Pension Expense from Experience in the Current Reporting Period.*

GASB Statement No. 68 Reconciliation (Dollars in Thousands)
Current and Prior Reporting Periods

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Net Deferred Outflows Prior Year	Total Pension Expense*
Balance Beginning of Year	**$ 32,858,101**	**$ 28,587,653**	**$ 4,270,448**				
Changes for the Year:							
Service Cost	$ 648,767		$ 648,767				$ 648,767
Interest on Total Pension Liability	$ 2,098,002		$ 2,098,002				$ 2,098,002
Interest on Fiduciary Net Position		$ 1,832,058	$ (1,832,058)				$ (1,832,058)
Changes in Benefit Terms	$ -		$ -				$ -
Liability Experience Gains and Losses	$ 88,206		$ 88,206	$ 66,154	$ 84,605	$ (104,452)	$ 2,205
Changes in Assumptions	$ 72,199		$ 72,199	$ 1,792,447	$ 32,213	$ 2,512,982	$ 824,947
Contributions - Employer		$ 562,291	$ (562,291)				$ -
Contributions - Employees		$ 457,740	$ (457,740)				$ (457,740)
Asset Gain/(Loss)		$ (3,581,244)	$ 3,581,244	$ 3,163,610	$ 3,026,232	$ (3,698,386)	$ (254,520)
Benefit Payouts	$ (1,811,057)	$ (1,811,057)	$ -				$ -
Administrative Expenses		$ (13,398)	$ 13,398				$ 13,398
Other		$ 142	$ (142)				$ (142)
Net Changes	**$ 1,096,117**	**$ (2,553,468)**	**$ 3,649,585**				**$ 1,042,859**
Balance End of Year	**$ 33,954,218**	**$ 26,034,185**	**$ 7,920,033**	**$ 5,022,211**	**$ 3,143,050**	**$ (1,289,856)**	

** Pension Expense from Experience in the Current and Prior Reporting Periods.*

Summary of Population Statistics

		Terminated		Recipients			
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
GERP Members on 7/1/2021	**149,281**	**66,048**	**81,052**	**99,441**	**3,577**	**9,214**	**408,613**
New members	21,451	0	0	0	0	0	**21,451**
Return to active	3,128	(1,135)	(1,993)	0	0	0	**0**
Terminated non-vested	(9,253)	0	9,253	0	0	0	**0**
Service retirements	(3,293)	(3,271)	0	6,564	0	0	**0**
Terminated deferred	(7,187)	7,187	0	0	0	0	**0**
Terminated refund/transfer	(3,853)	(1,032)	(5,403)	0	0	0	**(10,288)**
Deaths	(226)	(188)	(219)	(2,944)	(188)	(621)	**(4,386)**
New beneficiary	0	0	0	0	0	796	**796**
Disabled	(61)	0	0	0	61	0	**0**
Data adjustments	0	1,027	1,985	60	39	(19)	**3,092**
Net change	706	2,588	3,623	3,680	(88)	156	**10,665**
GERP Members on 6/30/2022	**149,987**	**68,636**	**84,675**	**103,121**	**3,489**	**9,370**	**419,278**

SECTION E

SUMMARY OF BENEFITS

Summary of Plan Provisions - Basic

Following is a summary of the major plan provisions used in the valuation of this report. PERA is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report. Many of the plan provisions described below are no longer relevant due to the age and/or service of remaining Basic active members.

Plan year	July 1 through June 30
Eligibility	A public employee who is not covered under the Social Security Act. General exceptions are employees covered by other public funds, certain part-time employees and full-time students under age 23.
Contributions	Shown as a percent of salary: <u>Member</u> 9.10% of salary <u>Employer</u> 11.78% of salary Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
Allowable service	Service during which member contributions were made. May also include certain leaves of absence and military service.
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leaves and sick leave payments, severance payments, Workers' Compensation benefits and employer-paid flexible spending accounts and employer-paid deferred compensation deposits, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.
Average salary	Average of the five highest successive years of annual salary. Average salary is based on all Allowable Service if less than five years.
Vesting	Hired before July 1, 2010: 100% vested after 3 years of Allowable Service. Hired after June 30, 2010: 100% vested after 5 years of Allowable Service. (Not applicable since all Basic members were hired before 1968.)
Retirement	
<u>Normal retirement benefit</u>	
Age/service requirement	Age 65 and vested. Proportionate retirement annuity is available at age 65 and one year of Allowable Service.
Amount	2.70% of Average Salary for each year of Allowable Service.
<u>Early retirement benefit</u>	
Age/service requirement	(a.) Age 55 and vested. (b.) Any age with 30 years of Allowable Service. (c.) Rule of 90: Age plus Allowable Service totals 90.

Retirement (Continued)

Early retirement benefit (Continued)

Amount	The greater of (a) and (b): (a.) 2.20% of Average Salary for each of the first ten years of Allowable Service and 2.70% of Average Salary for each subsequent year with reduction of 0.25% for each month if the Member is under age 65 at time of retirement and has less than 30 years of Allowable Service or if the Member is under age 62 and has 30 or more years of Allowable Service. No reduction if age plus years of Allowable Service totals 90. (b.) 2.70% of Average Salary for each year of Allowable Service assuming augmentation to age 65 at 3.00% per year and actuarial reduction for each month the Member is under age 65. Augmentation adjustment is phased out over a five-year period starting July 1, 2019, resulting in no augmentation adjustment after June 30, 2024.
Form of payment	Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 25%, 50%, 75% or 100% Joint and Survivor. If a Joint and Survivor benefit is elected and the beneficiary predeceases the annuitant, the annuitant's benefit increases to the Life Annuity amount. This "bounce back" is subsidized by the plan.
Benefit increases	Benefit recipients will receive increases each year in January based upon 50% of the current Social Security increase, not less than 1.0% and not more than 1.5%, beginning January 1, 2019. For retirements on or after January 1, 2024, the first benefit increase is delayed until the retiree reaches Normal Retirement Age (not applicable to Rule of 90 retirees, disability benefit recipients, or survivors). A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of June 30 will receive a pro rata increase. Members retired under laws in effect before July 1, 1973 receive an additional lump sum payment each year. In 1989, this lump sum payment is the greater of $25 times each full year of Allowable Service or the difference between $400 times each full year of Allowable Service and the sum of benefits paid from any Minnesota public pension plan plus cash payments from the Social Security Administration for the preceding fiscal year July 1, 1988 through June 30, 1989. In each following year, the lump sum payment will increase by the same percentage increase that is applied to regular annuities paid from the fund. Effective January 1, 2002, annual lump sum payment is divided by 12 and paid as a monthly life annuity in the annuity form elected.

Summary of Plan Provisions – Basic (Continued)

Disability	
Disability benefit	
Age/service requirement	Total and permanent disability before normal retirement age if vested. Since all remaining active Basic members are over normal retirement age, none are eligible for disability benefits.
Amount	Normal Retirement benefit based on Allowable Service and Average Salary at disability without reduction for commencement before Normal Retirement Age. Supplemental benefit of $25 per month payable to the later of the normal retirement age or the five-year anniversary of commencement of disability. The disability benefit is reduced to that amount which, when added to Workers' Compensation, does not exceed the salary the disabled Member received as of the date of the disability or the salary currently payable for the same employment position substantially similar to the one the person held as of the date of the disability, whichever is greater. If a member became disabled prior to July 1, 1997 but did not commence his or her benefit before July 1, 1997, the benefit payable is calculated under the laws in effect at the time the Member became disabled and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%. Payments stop earlier if disability ceases. If death occurs prior to age 65, or within five years of disability, the surviving spouse can receive a refund or a survivor benefit. Dependent children are entitled to dependent child benefits subject to the 70.00% family maximum. Payments revert to a retirement annuity at normal retirement age. Benefits may be reduced on resumption of partial employment.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement, except benefit increases are paid prior to Normal Retirement.

Summary of Plan Provisions - Basic (Continued)

Disability (Concluded)	
Retirement after disability	
Age/service requirement	Normal retirement age.
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before normal retirement age or the normal retirement benefit available at normal retirement age, or an actuarially equivalent optional annuity.
Benefit increases	Same as for retirement, except benefit increases are paid prior to Normal Retirement.
Death	
Surviving spouse benefit	
Age/service requirement	Active Member with 18 months of Allowable Service or while Member is receiving a disability benefit.
Amount	50.00% of salary averaged over last six months. Family benefit is maximum of 70.00% and minimum of 50.00% of average salary. Benefit paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991. If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit as of July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%. Surviving spouse optional annuity may be elected in lieu of this benefit.
Benefit increases	Same as for retirement, except benefit increases are paid prior to Normal Retirement.
Surviving dependent children's benefit	
Age/service requirement	Active Member with 18 months of Allowable Service or while Member is receiving a disability benefit.
Amount	10.00% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 50.00% of salary and maximum of 70.00% of average salary. Benefits paid until child marries, dies, or attains age 18 (age 22 if full-time student).

Death (Concluded)

<u>Surviving dependent children's benefit (Concluded)</u>

Amount (Concluded)	If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement, except benefit increases are paid prior to Normal Retirement.

<u>Surviving spouse optional annuity</u>

Age/service requirement	Member or former Member who dies before retirement benefits commence and other survivor annuity is waived by spouse.
Amount	Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced the same as early retirement with half the applicable reduction factor used from age 55 to the actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer. If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit as of July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement, except benefit increases are paid prior to Normal Retirement.

<u>Refund of contributions with interest</u>

Age/service requirement	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	The excess of the Member's contributions with 6.00% interest until June 30, 2011; 4.00% through June 30, 2018; 3.00% thereafter over any disability or survivor benefits paid.

Summary of Plan Provisions - Basic (Continued)

Termination

Refund of contributions

Age/service requirement	Termination of public service.
Amount	Member's contributions with 6.00% interest through June 30, 2011. Beginning July 1, 2011, a member's contributions increase at 4.00% interest. Beginning July 1, 2018, a member's contributions increase at 3.00% interest. If a member is vested, a deferred annuity may be elected in lieu of a refund.

Deferred benefit

Age/service requirement	Fully vested.
Amount	Benefit computed under law in effect at termination and increased by the following "augmentation" percentage compounded annually for terminations prior to 2012:

(a.) 0.00% before July 1, 1971;

(b.) 5.00% from July 1, 1971 to January 1, 1981;

(c.) 3.00% thereafter until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012;

(d.) 5.00% thereafter until the earlier of the date the annuity begins and January 1, 2012;

(e.) 1.00% from January 1, 2012 through December 31, 2018; and

(f.) 0.00% from January 1, 2019, thereafter.

Members who terminate after 2011 will receive no future augmentation.

Members active with a public employer the day prior to the privatization of the employer become vested immediately.

Members who are privatized after June 30, 2020 will receive no future augmentation.

Summary of Plan Provisions - Basic (Continued)

Termination (Concluded)

Deferred benefit (Concluded)

Amount (Concluded)

Members who are privatized before July 1, 2020 receive enhanced augmentation (unless the enhancement results in a net loss to the Plan). Amount is payable at normal or early retirement. Augmentation is compounded annually through benefit commencement, equal to:

Date of privatization	Augmentation prior to July 1, 2020	July 1, 2020 through December 31, 2023	After December 31, 2023
Prior to January 1, 2007 (or January 1, 2008 for Hutchinson Area Health Care)	5.5% prior to age 55, 7.5% after	2.0%	0.0%
After December 31, 2006 (2007 for Hutchinson Area Health Care) and prior to January 1, 2011	4.0% prior to age 55, 6.0% after	2.0%	0.0%
After December 31, 2010 and prior to July 1, 2020	2.0%*	2.0%*	0.0%

** Reduced to 1% if 2% augmentation resulted in a net loss to the Plan.*

If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997 and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Form of payment — Same as for retirement.

Actuarial equivalent factors — Effective July 1, 2019, actuarially equivalent factors based on the RP-2014 mortality table for healthy annuitants for a member turning age 62 in 2021, reflecting projected mortality improvements using Scale MP-2017, white collar adjustment, male rates set forward two years, female rates multiplied by 0.90, blended 40% males, 6.17% post-retirement interest, and 7.50% pre-retirement interest. Reflecting statutory requirements, joint and survivor factors are based on an interest assumption of 6.50%.

Summary of Plan Provisions - Basic (Concluded)

Combined service annuity	Members are eligible for combined service benefits if they: (a.) Meet minimum retirement age for each plan participated in and total public service meets the vesting requirements of each plan; or (b.) Have three or more years of service under PERA and the covered fund(s) (if hired prior to July 1, 2010). Other requirements for combined service include: (a.) Member must have at least six months of allowable service credit in each plan worked under; and (b.) Member may not be in receipt of a benefit from another plan. Members who meet the above requirements must have their benefits based on the following: (a.) Allowable service in all covered plans is combined in order to determine eligibility for early retirement. (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Changes in plan provisions	There were no changes in plan provisions since the previous valuation.

Summary of Plan Provisions - Coordinated

Following is a summary of the major plan provisions used in the valuation of this report. PERA is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30		
Eligibility	A public employee who is covered under the Social Security Act. General exceptions are employees covered by other public funds, certain part-time employees and full-time students under age 23. City managers and persons holding certain elective office positions may choose to become Members.		
Contributions	Shown as a percent of salary:		
<u>Effective date</u>	**<u>Member</u>**	**<u>Employer</u>**	**<u>Additional Employer</u>**
January 1, 2015	6.50%	6.50%	1.00%
	Additional Employer Contribution remains in effect until the plan is 100% funded on an actuarial value of assets basis (contribution is repealed the following March 31). Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).		
Allowable service	Service during which member contributions are deducted. May also include certain leaves of absence and military service.		
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leave and sick leave payments, severance payments, Workers' Compensation benefits and employer-paid flexible spending accounts and employer-paid deferred compensation deposits, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.		
Average salary	Average of the five highest successive years of annual salary. Average salary is based on all Allowable Service if less than five years.		
Vesting	Hired before July 1, 2010: 100% vested after three years of Allowable Service. Hired after June 30, 2010: 100% vested after five years of Allowable Service.		
Retirement <u>Normal retirement benefit</u> Age/service requirement	First hired before July 1, 1989: (a.) Age 65 and vested. (b.) Proportionate retirement annuity is available at age 65 and one year of Allowable Service.		
Amount	1.70% of Average Salary for each year of Allowable Service.		

Retirement (Continued)

Normal retirement benefit (Continued)

Age/service requirement	First hired after June 30, 1989: (a.) The greater of age 65 or the age eligible for full Social Security retirement benefits but no later than age 66 and vested. (b.) Proportionate Retirement Annuity is available at normal retirement age and one year of Allowable Service.
Amount	1.70% of Average Salary for each year of Allowable Service.

Early retirement benefit

Age/service requirement	First hired before July 1, 1989: (a.) Age 55 and vested. (b.) Any age with 30 years of Allowable Service. (c.) Rule of 90: Age plus Allowable Service totals 90. First hired after June 30, 1989: (a.) Age 55 and vested.
Amount	First hired before July 1, 1989: The greater of (a) or (b): (a.) 1.20% of Average Salary for each of the first ten years of Allowable Service and 1.70% of Average Salary for each subsequent year with reduction of 0.25% for each month the Member is under age 65 at time of retirement or under age 62 if 30 years of Allowable Service. No reduction if age plus years of Allowable Service totals 90. (b.) 1.70% of Average Salary for each year of Allowable Service assuming augmentation to age 65 at 3.00% per year and actuarial reduction for each month the Member is under age 65. Augmentation adjustment is phased out over a five-year period starting July 1, 2019, resulting in no augmentation adjustment after June 30, 2024. First hired after June 30, 1989: (a.) 1.70% of Average Salary for each year of Allowable Service assuming augmentation to the age eligible for full Social Security retirement benefit (but not higher than age 66) at 3.00% (2.50% if hired after June 30, 2006) per year and actuarial reduction for each month the member is under the normal retirement age. Augmentation adjustment is phased out over a five-year period starting July 1, 2019, resulting in no augmentation adjustment after June 30, 2024.

Summary of Plan Provisions – Coordinated (Continued)

Retirement (Concluded)	
Form of payment	Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 25%, 50%, 75% or 100% Joint and Survivor. If a Joint and Survivor benefit is elected and the beneficiary predeceases the annuitant, the annuitant's benefit increases to the Life Annuity amount. This "bounce back" is subsidized by the plan.
Benefit increases	Benefit recipients receive increases each year in January based upon 50% of the current Social Security increase, not less than 1.0% and not more than 1.5%, beginning January 1, 2019. For retirements on or after January 1, 2024, the first benefit increase is delayed until the retiree reaches Normal Retirement Age (not applicable to Rule of 90 retirees, disability benefit recipients, or survivors). A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of June 30 will receive a pro rata increase. Members retired under laws in effect before July 1, 1973 will receive an additional lump sum payment each year. In 1989, this lump sum payment is $25 times each full year of Allowable Service. In each following year, the lump sum payment will increase by the same percentage increase that is applied to regular annuities paid from the fund.
Disability	
Disability benefit	
Age/service requirement	Total and permanent disability before normal retirement age if vested.
Amount	Normal Retirement benefit based on Allowable Service and Average Salary at disability without reduction for commencement before normal retirement age. The disability benefit is reduced to that amount which, when added to Workers' Compensation, does not exceed the salary the disabled Member received as of the date of the disability or the salary currently payable for the same employment position substantially similar to the one the person held as of the date of the disability, whichever is greater. If a Member became disabled prior to July 1, 1997 but did not commence his or her benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Disability (Concluded)	
<u>Disability benefit (Concluded)</u>	
Amount (Concluded)	Payments stop if disability ceases or death occurs. Payments change to a retirement annuity at normal retirement age. Benefits may be reduced on resumption of partial employment.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement, except benefit increases are paid prior to Normal Retirement.
<u>Retirement after disability</u>	
Age/service requirement	Normal retirement age.
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before normal retirement age or the normal retirement benefit available at normal retirement age, or an actuarially equivalent optional annuity.
Benefit increases	Same as for retirement, except benefit increases are paid prior to Normal Retirement.
Death	
<u>Surviving spouse optional annuity</u>	
Age/service requirement	Member or former Member who dies before retirement or disability benefits commence.
Amount	Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced the same as early retirement with half the applicable reduction factor used from age 55 to the actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer. If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement, except benefit increases are paid prior to Normal Retirement.

Summary of Plan Provisions – Coordinated (Continued)

Death (Concluded)	
Refund of contributions	
Age/service requirement	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	The excess of the Member's contributions with 6.00% interest until June 30, 2011; 4.00% through June 30, 2018; 3.00% thereafter over any disability or survivor benefits paid.
Termination	
Refund of contributions	
Age/service requirement	Termination of public service.
Amount	Member's contributions with 6.00% interest through June 30, 2011. Beginning July 1, 2011, a member's contributions increase at 4.00% interest. Beginning July 1, 2018, a member's contributions increase at 3.00% interest. If a member is vested, a deferred annuity may be elected in lieu of a refund.
Deferred benefit	
Age/service requirement	Fully vested.
Amount	Benefit computed under law in effect at termination and increased by the following percentage (augmentation) compounded annually for terminations prior to 2012: (a.) 0.00% before July 1, 1971; (b.) 5.00% from July 1, 1971 to January 1, 1981; (c.) 3.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012; (d.) 5.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of the date the annuity begins and January 1, 2012; or (e.) 1.00% from January 1, 2012 through December 31, 2018; and (f.) 0.00% from January 1, 2019, thereafter. Members who terminate after 2011 will receive no future augmentation. Members active with a public employer the day prior to the privatization of the employer become vested immediately. Members who are privatized after June 30, 2020 will receive no future augmentation.

Termination (Concluded)

Deferred benefit (Concluded)

Amount (Concluded)

Members who are privatized before July 1, 2020 receive enhanced augmentation (unless the enhancement results in a net loss to the Plan). Amount is payable at normal or early retirement. Augmentation is compounded annually through benefit commencement, equal to:

Date of privatization	Augmentation prior to July 1, 2020	July 1, 2020 through December 31, 2023	After December 31, 2023
Prior to January 1, 2007 (or January 1, 2008 for Hutchinson Area Health Care)	5.5% prior to age 55, 7.5% after	2.0%	0.0%
After December 31, 2006 (2007 for Hutchinson Area Health Care) and prior to January 1, 2011	4.0% prior to age 55, 6.0% after	2.0%	0.0%
After December 31, 2010 and prior to July 1, 2020	2.0%*	2.0%*	0.0%

** Reduced to 1% if 2% augmentation resulted in a net loss to the Plan.*

If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997 and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Form of payment — Same as for retirement.

Actuarial equivalent factors

Effective July 1, 2019, actuarially equivalent factors based on the RP-2014 mortality table for healthy annuitants for a member turning age 62 in 2021, reflecting projected mortality improvements using Scale MP-2017, white collar adjustment, male rates set forward two years, female rates multiplied by 0.90, blended 40% males, 6.17% post-retirement interest, and 7.50% pre-retirement interest. Reflecting statutory requirements, joint and survivor factors are based on an interest assumption of 6.50%.

Summary of Plan Provisions – Coordinated (Concluded)

Combined service annuity	Members are eligible for combined service benefits if they: (a.) Meet minimum retirement age for each plan participated in and total public service meets the vesting requirements of each plan; or (b.) Have three or more years of service under PERA and the covered fund(s) (if hired prior to July 1, 2010). Other requirements for combined service include: (a.) Member must have at least six months of allowable service credit in each plan worked under; and (b.) Member may not be in receipt of a benefit from another plan. Members who meet the above requirements must have their benefit based on the following: (a.) Allowable service in all covered plans is combined in order to determine eligibility for early retirement. (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Changes in plan provisions	There were no changes in plan provisions since the previous valuation.

Summary of Plan Provisions – Minneapolis Employees Retirement Fund (MERF)

Following is a summary of the major plan provisions used in the valuation of this report. PERA is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30
Eligibility/employee rule	An employee of the City of Minneapolis, the Metropolitan Airports Commission, the Met Council/Environmental Services, the Municipal Employees Retirement Fund, and Special School District No. 1 if covered prior to July 1, 1978. Employees covered July 1, 1978 or later are covered by the Public Employees Retirement Association (PERA) Plan. Effective July 1, 1992, licensed peace officers and firefighters who are employed by the Metropolitan Airports Commission and covered by the Minneapolis Employees Retirement Fund will receive the greater of retirement, disability, or survivor benefits under: a) The Minneapolis Employees Retirement Fund; or b) The Public Employees Retirement Association (PERA) Police & Fire Plan.
Full consolidation	The MERF Division fully merged with PERA's General Employees Retirement Plan, effective January 1, 2015. Upon consolidation, state and employer contributions were revised as shown herein.
Contributions	
Member	9.75% of salary
Employer	9.75% of salary (Employer Regular Contributions) Employer Regular and Additional Contributions will be paid as long as there are active members. Employer Supplemental Contributions equal $21,000,000 per year through September 2031.
Contribution allocation	Employer Supplemental Contributions are allocated to the employers in proportion to their share of the actuarial accrued liability of MERF on July 1, 2009, as follows:

Employer	Allocation
City of Minneapolis	54.78%
Minneapolis Park Board	10.33%
Met Council	1.74%
Metropolitan Airport Commission	5.76%
Municipal Building Commission	1.08%
Minneapolis School District No. 1	23.04%
Hennepin County	3.17%
MnSCU	0.10%
Total	100.00%

Summary of Plan Provisions – Minneapolis Employees Retirement Fund (MERF) (Continued)

State contributions	The State's contributions equal $16,000,000 and are payable by September 30 each year through September 15, 2031.
Allowable service	Service during which member contributions were made. Allowable Service may also include certain leaves of absence, military service and service prior to becoming a member. Allowable service also includes time on duty disability provided that the member returns to active service if the disability ceases.
Salary	All amounts of salary, wages or compensation.
Average salary	Average of the five highest calendar years of salary out of the last ten calendar years.
Retirement Normal retirement benefit	
Age/service requirement	Age 60 and 10 years of employment. Any age with 30 years of employment. Proportionate retirement annuity is available at age 65 and one year allowable service.
Amount	2.00% of average salary for the first 10 years of allowable service plus 2.50% of average salary for each subsequent year of allowable service.

Summary of Plan Provisions –
Minneapolis Employees Retirement Fund (MERF) (Continued)

Disability	
Disability benefit	
Age/service requirement	Total and permanent disability before age 60 with five years of allowable service, or no allowable service if a work-related disability.
Amount	2.00% of average salary for the first 10 years of disability service plus 2.50% of average salary for each subsequent year of disability service. Disability service is the greater of (a) or (b) where: (a.) equals allowable service plus service projected to age 60, subject to a maximum of 22 years, and (b.) equals allowable service. Benefit is reduced by Workers' Compensation benefits. Payments stop at age 60 or earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment.
Disability after separation	
Age/service requirement	Total and permanent disability after electing to receive a retirement benefit but before age 60.
Amount	Actuarial equivalent of total credit to member's account.
Retirement after disability	
Age/service requirement	Total and permanent disability after electing to receive a retirement benefit but before age 60. Employee is still disabled after age 60.
Amount	Benefit continues according to the option selected.

Summary of Plan Provisions – Minneapolis Employees Retirement Fund (MERF) (Continued)

Death	
<u>Pre-retirement survivor's spouse benefit</u>	
Age/service requirement	Active member with 18 months of allowable service.
Amount	30% of salary averaged over the last six months to the surviving spouse plus 10% of salary averaged over the last six months to each surviving child. Maximum benefit is $900 per month.
<u>Pre-retirement survivor's spouse annuity</u>	
Age/service requirement	Active member or former member who dies before retirement with 20 years of allowable service.
Amount	Actuarial equivalent of a single life annuity which would have been paid as a retirement benefit on the date of death without regard to eligibility age for retirement benefit. If there is no surviving spouse, the designated beneficiary may be a dependent child or dependent parent.
<u>Refund of accumulated city contributions</u>	
Age/service requirement	Active member or former member dies after 10 years of allowable service and prior to retirement.
Amount	Present value of the City's annual installments of $60 or, in the case of a former member, the net accumulation of city deposits. This benefit is not payable if survivor's benefits are paid.
<u>Lump sum</u>	
Age/service requirement	Death prior to service or disability retirement without an eligible surviving beneficiary.
Amount	$750 with less than 10 years allowable service, or $1,500 with 10 or more years of allowable service.
<u>Refund of member contributions at death</u>	
Age/service requirement	Active member or former member dies before retirement.
Amount	The excess of the member's contributions (exclusive of the contributions to the survivor's account) plus interest to the date of death.

Summary of Plan Provisions – Minneapolis Employees Retirement Fund (MERF) (Concluded)

Termination	
<u>Deferred benefit</u>	
Age/service requirement	Three years of allowable service.
Amount	Benefit computed under law in effect at termination and increased by the following percentage (augmentation), compounded annually: (a.) 0.00% prior to July 1, 1971, (b.) 5.00% from July 1, 1971 to January 1, 1981, and (c.) 3.00% thereafter until the annuity begins. Amount is payable at or after age 60.
<u>Refund of member contributions upon termination</u>	
Age/service requirement	Termination of public service.
Amount	Member's contributions with interest. A deferred annuity may be elected in lieu of a refund if vested.
Form of payment	▪ Life annuity. ▪ Life annuity with 3, 5, 10 or 15 years guaranteed. ▪ Life annuity with lump sum death benefit. ▪ Joint & Survivor (with or without bounce back feature).
Optional form conversion factors	1986 PET mortality table with a one-year setback, blended 50% male and 50% female, and 5% interest.
Two dollar bill and annuity	Optional Two Dollar Bill money purchase annuity available at age 55 with 20 years of service if member had service prior to June 28, 1973. According to PERA, this option is rarely utilized. We have assumed that remaining active members will not elect this optional benefit.
Benefit increases	Benefit recipients receive increases each year in January based upon 50% of the current Social Security increase, not less than 1.0% and not more than 1.5%, beginning January 1, 2019. For retirements on or after January 1, 2024, the first benefit increase is delayed until the retiree reaches Normal Retirement Age (not applicable to Rule of 90 retirees, disability benefit recipients, or survivors).
Changes in plan provisions	There were no changes on plan provisions since the previous valuation.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS USED FOR THE DETERMINATION OF TOTAL PENSION LIABILITY AND RELATED VALUES

Actuarial Methods Used for the Determination of Total Pension Liability and Related Values

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Valuation of Future Post-Retirement Benefit Increases

Benefit increases after retirement will equal 50% of the Social Security Cost of Living Adjustment, not less than 1.0% and not more than 1.5%, beginning January 1, 2019. Stochastic modeling was used to determine the assumption that benefit increases will equal 1.25% per year. This is only an assumption; actual increases will depend on actual experience.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions – Basic and Coordinated

The following assumptions were used in valuing the liabilities and benefits under the plan. The assumptions are based on the last experience study dated June 27, 2019, and a review of inflation and investment assumptions dated July 12, 2022. PERA staff selected the long-term expected rate of investment return of 6.50% based on input from GRS that the proposed selection would be reasonable for the purpose of the measurement.

The Allowance for Combined Service Annuity assumptions are based on an analysis completed by the LCPR actuary and documented in a report dated October 2016.

Investment return	6.50% per annum.
Single Discount Rate	6.50% per annum.
Benefit increases after retirement	1.25% per annum.
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year.
Inflation	2.25% per year.
Payroll growth	3.00% per year.
Mortality rates	
Healthy pre-retirement	Pub-2010 General Employee Mortality Table adjusted for mortality improvements using projection scale MP-2021. Rates are multiplied by a factor of 1.07 for males and 0.98 for females.
Healthy post-retirement	Pub-2010 Healthy Retired General Mortality Table adjusted for mortality improvements using projection scale MP-2021. Male rates are multiplied by a factor of 1.02 and female rates are multiplied by a factor of 0.90.
Disabled retirees	Pub-2010 General/Teacher Disabled Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2021. Rates are set forward two years for males and set forward four years for females.
Notes	The Pub-2010 Employee Mortality Table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rates for ages 50 to 120. We have extended the annuitant mortality table as needed for members and beneficiaries younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.
Retirement	Members retiring from active status are assumed to retire according to the age-related rates shown in the tables. Members who have attained the highest assumed retirement age are assumed to retire in one year. Note that significant plan changes reflected in this report may result in behavior changes that are not anticipated in the current retirement rates.

Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

Withdrawal	Service-related rates based on experience; see table of sample rates.
Disability	Age-related rates based on experience; see table of sample rates.
Allowance for combined service annuity	Liabilities for former members are increased by 15.0% for vested members and 3.0% for non-vested members to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	In the valuation year, equal to prior year administrative expenses expressed as a percentage of prior year payroll. In each subsequent year, equal to the initial administrative expense percentage applied to payroll for the closed group.
Refund of contributions	For non-vested members, account balances accumulate interest until the assumed commencement date and are discounted back to the valuation date. Active members decrementing after becoming eligible for a deferred benefit are assumed to take the contributions accumulated with interest if larger than the value of the benefit.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at Normal Retirement.
Percentage married	80% of male and 70% of female active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Males are assumed to have a beneficiary three years younger, while females are assumed to have a beneficiary one year older. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 10% elect 25% Joint & Survivor option 15% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 45% elect 100% Joint & Survivor option Females: 10% elect 25% Joint & Survivor option 10% elect 50% Joint & Survivor option 5% elect 75% Joint & Survivor option 30% elect 100% Joint & Survivor option Remaining married members and unmarried members are assumed to elect the Straight Life option. Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrements are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.

Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

Pay increases	Pay increases are assumed to happen at the beginning of the fiscal year. This is equivalent to assuming that reported earnings are pensionable earnings for the year ending on the valuation date.
Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided. In cases where submitted data was missing or incomplete, the following assumptions, based on average results for applicable members at the time of the last experience study, were applied: <u>Data for active members:</u> There were 4,207 members reported with a salary less than or equal to $100 (after annualization). We used prior year salary (2,125 members), if available; otherwise high five salary with a 10% load to account for salary increases (1,197 members). If neither prior year salary or high five salary was available, we assumed a value of $30,000. There were 3,813 members reported without a gender and 417 members reported with an invalid date of birth. We assumed a date of birth based on an entry age of 36 and female gender. <u>Data for terminated members:</u> We calculated benefits for these members using the reported Average Salary and credited service. If Average Salary was not reported (97 members), we assumed a value of $24,000. If credited service was not reported (170 members), we assumed credited service was elapsed time from hire to termination date (165 members); if elapsed time was not available, we assumed six years. If termination date was invalid or not reported (171 members), we assumed the termination date was equal to hire date plus credited service; otherwise the valuation date unless they are noted as a pre-July 1, 1989 hire, then June 30, 1989. If reported termination date occurs prior to reported hire date, the two dates were swapped. There were 668 members reported without a gender. We assume female gender. There were 87 members reported without a date of birth, we assumed a birth date of July 1, 1970. <u>Data for retired members:</u> There were 224 members reported without a gender. We assumed retirees are female and beneficiaries are male. There were no members reported with an invalid date of birth.

Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

Unknown data for certain members (Concluded)	<u>Data for retired members (Concluded):</u> Because PERA reclassifies disabled members as retirees once the member reaches Normal Retirement Age, we compare the members that PERA reports as retirees to our disabled group from the last valuation. If a member was disabled in the prior valuation, we reclassify that member as a disabled retiree in this year's valuation. We reclassified 2,244 retirees as disabled retirees in this valuation.
Changes in actuarial assumptions	The mortality improvement scale was changed from Scale MP-2020 to Scale MP-2021.

Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

	Percentage of Members Dying Each Year*					
	Healthy Post-Retirement Mortality**		Healthy Pre-Retirement Mortality**		Disability Mortality**	
Age in 2022	Male	Female	Male	Female	Male	Female
20	0.04%	0.01%	0.04%	0.01%	0.36%	0.18%
25	0.03	0.01	0.04	0.01	0.31	0.29
30	0.05	0.02	0.05	0.02	0.55	0.51
35	0.07	0.03	0.08	0.03	0.78	0.80
40	0.09	0.04	0.09	0.04	1.02	1.06
45	0.12	0.06	0.11	0.05	1.31	1.33
50	0.29	0.18	0.15	0.07	1.71	1.55
55	0.42	0.26	0.22	0.12	2.18	1.90
60	0.65	0.36	0.35	0.19	2.76	2.27
65	0.94	0.53	0.51	0.28	3.38	2.58
70	1.44	0.84	0.70	0.42	4.02	3.26
75	2.42	1.50	1.04	0.70	5.27	4.87
80	4.37	2.77	1.66	1.19	7.69	7.83
85	8.06	5.27	7.11	4.93	11.59	12.04
90	14.03	9.88	14.72	10.76	17.94	17.16

* *Generally, mortality rates are expected to increase as age increases (with the exception of young ages, where expected mortality may decrease as age increases). In cases where the application of the projection scale would reverse the nature of this trend, standard mortality rates have been adjusted slightly. This adjustment has no material effect on results.*

** *Rates are adjusted for mortality improvements using Scale MP-2021, from a base year of 2010.*

	Rates of Disability Retirement	
Age	Male	Female
20	0.01%	0.01%
25	0.01	0.01
30	0.01	0.01
35	0.02	0.02
40	0.04	0.04
45	0.06	0.05
50	0.11	0.10
55	0.26	0.14
60	0.53	0.21
65	0.00	0.00
70	0.00	0.00

Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

	Rates of Service Retirement		
Age	**Rule of 90 Eligible**	**Tier 1**	**Tier 2**
55	20.0%	4.0%	4.0%
56	15.0%	4.0%	4.0%
57	15.0%	5.0%	4.0%
58	15.0%	5.0%	5.0%
59	15.0%	6.0%	5.0%
60	15.0%	8.0%	6.0%
61	15.0%	10.0%	8.0%
62	30.0%	20.0%	15.0%
63	25.0%	20.0%	15.0%
64	25.0%	20.0%	15.0%
65	40.0%	40.0%	25.0%
66	35.0%	35.0%	35.0%
67	25.0%	25.0%	25.0%
68	25.0%	25.0%	25.0%
69	25.0%	25.0%	25.0%
70	25.0%	25.0%	25.0%
71+	100.0%	100.0%	100.0%

Summary of Actuarial Assumptions – Basic and Coordinated (Concluded)

Salary Scale			Rates of Termination	
Year	Increase	Year	Male	Female
1	10.25%	1	21.50%	21.50%
2	7.25	2	16.25	17.25
3	6.00	3	11.00	13.00
4	5.50	4	9.00	11.00
5	5.00	5	8.00	9.00
6	4.70	6	7.00	8.50
7	4.50	7	6.25	8.00
8	4.40	8	5.50	7.50
9	4.30	9	5.00	7.00
10	4.20	10	4.50	6.00
11	4.00	11	4.25	5.50
12	3.90	12	4.00	5.25
13	3.80	13	3.75	5.00
14	3.70	14	3.50	4.75
15	3.65	15	3.00	4.25
16	3.60	16	2.75	3.75
17	3.50	17	2.50	3.50
18	3.40	18	2.25	3.00
19	3.40	19	2.00	2.80
20	3.40	20	1.90	2.70
21	3.30	21	1.85	2.60
22	3.30	22	1.80	2.50
23	3.30	23	1.75	2.40
24	3.20	24	1.70	2.30
25	3.20	25	1.65	2.20
26	3.10	26	1.60	2.10
27	3.00	27	1.55	2.00
28	3.00	28	1.50	1.50
29	3.00	29	1.00	1.50
30+	3.00	30	1.00	1.50

Summary of Actuarial Assumptions - MERF

The following assumptions were used in valuing the liabilities and benefits under the plan for MERF members only. Assumptions regarding investment return, mortality, benefit increases, and Combined Service Annuity (CSA) are the same as shown in the Basic and Coordinated Plan assumption summary.

Salary increases	Total reported pay for prior calendar year increased 1.86% (half year of 3.75%, compounded) to prior fiscal year and 3.75% annually for each future year.
Retirement	Active members are assumed to retire at age 61, or immediately if currently age 61 or older.
Withdrawal	Rates are shown in rate table.
Disability	Age-related rates based on experience; see table of sample rates.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 60.
Percentage married	66.67% of active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Females are assumed to be three years younger than their male spouses. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	Members are assumed to elect a life annuity.
Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided. In cases where submitted data was missing or incomplete, the following assumptions were applied: There were no members with missing or invalid dates of birth. <u>Data for active members:</u> There were no active members with missing salary or service. <u>Data for terminated members:</u> Benefits were provided by PERA for all members. <u>Data for Retired members:</u> There were 3 members reported without a gender. We assumed male gender. Because PERA reclassifies disabled members as retirees once the member reaches Normal Retirement Age, we compare the members that PERA reports as retirees to our disabled group from the last valuation. If a member was disabled in the prior valuation, we reclassify that member as a disabled retiree in this year's valuation. We reclassified 56 retirees as disabled retirees in this valuation.

Summary of Actuarial Assumptions – MERF (Concluded)

Age	Rates of Termination		Rates of Disability Retirement	
	Male	Female	Male	Female
20	21.00%	21.00%	0.21%	0.21%
25	11.00	11.00	0.21	0.21
30	5.00	5.00	0.23	0.23
35	1.50	1.50	0.30	0.30
40	1.00	1.00	0.41	0.41
45	1.00	1.00	0.61	0.61
50	1.00	1.00	0.93	0.93
55	1.00	1.00	1.60	1.60
60	1.00	1.00	0.00	0.00
65	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed long-term expected rate of return is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.50%; the municipal bond rate is 3.69%; and **the resulting single discount rate is 6.50%**.

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate. It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

Single Discount Rate Development
Projection of Contributions (Dollars in Thousands)

	Payroll			Projected Contributions				
Fiscal Year Ending	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees*	Contributions on Future Payroll toward Current UAL**	Additional State Contributions	Total Contributions
2022	$ 7,042,154	$ -	$ 7,042,154					
2023	$ 6,874,782	$ 227,559	$ 7,102,341	$ 446,861	$ 515,609	$ 10,080	$ 37,000	$ 1,009,550
2024	$ 6,497,334	$ 818,077	$ 7,315,411	$ 422,327	$ 487,300	$ 36,241	$ 37,000	$ 982,868
2025	$ 6,154,606	$ 1,380,268	$ 7,534,874	$ 400,049	$ 461,595	$ 61,147	$ 37,000	$ 959,791
2026	$ 5,866,670	$ 1,894,250	$ 7,760,920	$ 381,334	$ 440,000	$ 83,915	$ 37,000	$ 942,249
2027	$ 5,597,118	$ 2,396,629	$ 7,993,747	$ 363,813	$ 419,784	$ 106,170	$ 37,000	$ 926,767
2028	$ 5,343,313	$ 2,890,247	$ 8,233,560	$ 347,315	$ 400,748	$ 128,039	$ 37,000	$ 913,102
2029	$ 5,106,340	$ 3,374,227	$ 8,480,567	$ 331,912	$ 382,975	$ 149,479	$ 37,000	$ 901,366
2030	$ 4,882,521	$ 3,852,463	$ 8,734,984	$ 317,364	$ 366,189	$ 170,664	$ 37,000	$ 891,217
2031	$ 4,670,755	$ 4,326,278	$ 8,997,033	$ 303,599	$ 350,307	$ 191,654	$ 37,000	$ 882,560
2032	$ 4,468,630	$ 4,798,314	$ 9,266,944	$ 290,461	$ 335,147	$ 212,566	$ -	$ 838,174
2033	$ 4,273,316	$ 5,271,636	$ 9,544,952	$ 277,766	$ 320,499	$ 233,533	$ -	$ 831,798
2034	$ 4,084,046	$ 5,747,255	$ 9,831,301	$ 265,463	$ 306,303	$ 254,604	$ -	$ 826,370
2035	$ 3,901,119	$ 6,225,121	$ 10,126,240	$ 253,573	$ 292,584	$ 275,773	$ -	$ 821,930
2036	$ 3,723,988	$ 6,706,039	$ 10,430,027	$ 242,059	$ 279,299	$ 297,078	$ -	$ 818,436
2037	$ 3,551,238	$ 7,191,690	$ 10,742,928	$ 230,830	$ 266,343	$ 318,592	$ -	$ 815,765
2038	$ 3,383,255	$ 7,681,961	$ 11,065,216	$ 219,912	$ 253,744	$ 340,311	$ -	$ 813,967
2039	$ 3,219,116	$ 8,178,056	$ 11,397,172	$ 209,243	$ 241,434	$ 362,287	$ -	$ 812,964
2040	$ 3,056,487	$ 8,682,601	$ 11,739,088	$ 198,672	$ 229,236	$ 384,639	$ -	$ 812,547
2041	$ 2,894,173	$ 9,197,087	$ 12,091,260	$ 188,121	$ 217,063	$ 407,431	$ -	$ 812,615
2042	$ 2,731,872	$ 9,722,126	$ 12,453,998	$ 177,572	$ 204,890	$ 430,690	$ -	$ 813,152
2043	$ 2,569,834	$ 10,257,784	$ 12,827,618	$ 167,039	$ 192,738	$ 454,420	$ -	$ 814,197
2044	$ 2,408,611	$ 10,803,836	$ 13,212,447	$ 156,560	$ 180,646	$ 478,609	$ -	$ 815,815
2045	$ 2,248,246	$ 11,360,574	$ 13,608,820	$ 146,136	$ 168,618	$ 503,274	$ -	$ 818,028
2046	$ 2,088,213	$ 11,928,872	$ 14,017,085	$ 135,734	$ 156,616	$ 528,449	$ -	$ 820,799
2047	$ 1,929,020	$ 12,508,577	$ 14,437,597	$ 125,386	$ 144,676	$ 554,131	$ -	$ 824,193
2048	$ 1,772,140	$ 13,098,585	$ 14,870,725	$ 115,189	$ 132,911	$ 580,267	$ -	$ 828,367
2049	$ 1,618,579	$ 13,698,268	$ 15,316,847	$ 105,208	$ 121,393	$ 606,833	$ -	$ 833,434
2050	$ 1,469,225	$ 14,307,127	$ 15,776,352	$ 95,500	$ 110,192	$ 633,805	$ -	$ 839,497
2051	$ 1,324,537	$ 14,925,106	$ 16,249,643	$ 86,095	$ 99,340	$ 661,182	$ -	$ 846,617
2052	$ 1,185,006	$ 15,552,126	$ 16,737,132	$ 77,025	$ 88,875	$ 688,960	$ -	$ 854,860
2053	$ 1,051,787	$ 16,187,459	$ 17,239,246	$ 68,366	$ 78,884	$ 717,105	$ -	$ 864,355
2054	$ 925,813	$ 16,830,610	$ 17,756,423	$ 60,178	$ 69,436	$ 745,596	$ -	$ 875,210
2055	$ 807,617	$ 17,481,499	$ 18,289,116	$ 52,495	$ 60,571	$ 774,431	$ -	$ 887,497
2056	$ 697,432	$ 18,140,357	$ 18,837,789	$ 45,333	$ 52,307	$ 803,618	$ -	$ 901,258
2057	$ 595,686	$ 18,807,237	$ 19,402,923	$ 38,720	$ 38,720	$ 645,087	$ -	$ 722,527
2058	$ 502,546	$ 19,482,465	$ 19,985,011	$ 32,666	$ 32,666	$ 668,248	$ -	$ 733,580
2059	$ 418,365	$ 20,166,196	$ 20,584,561	$ 27,194	$ 27,194	$ 691,700	$ -	$ 746,088
2060	$ 343,076	$ 20,859,022	$ 21,202,098	$ 22,300	$ 22,300	$ 715,464	$ -	$ 760,064
2061	$ 276,751	$ 21,561,410	$ 21,838,161	$ 17,989	$ 17,989	$ 739,556	$ -	$ 775,534
2062	$ 219,309	$ 22,273,997	$ 22,493,306	$ 14,255	$ 14,255	$ 763,998	$ -	$ 792,508
2063	$ 170,158	$ 22,997,947	$ 23,168,105	$ 11,060	$ 11,060	$ 788,830	$ -	$ 810,950
2064	$ 129,093	$ 23,734,055	$ 23,863,148	$ 8,391	$ 8,391	$ 814,078	$ -	$ 830,860
2065	$ 95,382	$ 24,483,661	$ 24,579,043	$ 6,200	$ 6,200	$ 839,789	$ -	$ 852,189
2066	$ 68,609	$ 25,247,805	$ 25,316,414	$ 4,460	$ 4,460	$ 865,999	$ -	$ 874,919
2067	$ 48,040	$ 26,027,866	$ 26,075,906	$ 3,123	$ 3,123	$ 892,755	$ -	$ 899,001
2068	$ 32,397	$ 26,825,786	$ 26,858,183	$ 2,106	$ 2,106	$ 920,124	$ -	$ 924,336
2069	$ 20,937	$ 27,642,992	$ 27,663,929	$ 1,361	$ 1,361	$ 948,154	$ -	$ 950,876
2070	$ 12,831	$ 28,481,016	$ 28,493,847	$ 834	$ 834	$ 976,899	$ -	$ 978,567
2071	$ 7,451	$ 29,341,211	$ 29,348,662	$ 484	$ 484	$ 1,006,404	$ -	$ 1,007,372
2072	$ 4,157	$ 30,224,965	$ 30,229,122	$ 270	$ 270	$ 1,036,717	$ -	$ 1,037,257

** Employer contributions are 7.5% of payroll until 100% funded on an actuarial value of assets basis and 6.5% of payroll after. The employer contributions are assumed to change after 34 years.*

*** Equal to total contributions (14.00% of payroll for new employees; 13.00% of payroll after 34 years) net of normal cost and expenses (9.57% of payroll).*

Single Discount Rate Development
Projection of Contributions (Dollars in Thousands) (Concluded)

	Payroll			Projected Contributions				
Fiscal Year Ending	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees*	Contributions on Future Payroll toward Current UAL**	Additional State Contributions	Total Contributions
2073	$ 2,092	$ 31,133,904	$ 31,135,996	$ 136	$ 136	$ 1,067,893	$ -	$ 1,068,165
2074	$ 839	$ 32,069,237	$ 32,070,076	$ 55	$ 55	$ 1,099,975	$ -	$ 1,100,085
2075	$ 242	$ 33,031,936	$ 33,032,178	$ 16	$ 16	$ 1,132,995	$ -	$ 1,133,027
2076	$ 63	$ 34,023,080	$ 34,023,143	$ 4	$ 4	$ 1,166,992	$ -	$ 1,167,000
2077	$ 16	$ 35,043,822	$ 35,043,838	$ 1	$ 1	$ 1,202,003	$ -	$ 1,202,005
2078	$ 5	$ 36,095,148	$ 36,095,153	$ -	$ -	$ 1,238,064	$ -	$ 1,238,064
2079	$ 1	$ 37,178,006	$ 37,178,007	$ -	$ -	$ 1,275,206	$ -	$ 1,275,206
2080	$ -	$ 38,293,347	$ 38,293,347	$ -	$ -	$ 1,313,462	$ -	$ 1,313,462
2081	$ -	$ 39,442,148	$ 39,442,148	$ -	$ -	$ 1,352,866	$ -	$ 1,352,866
2082	$ -	$ 40,625,412	$ 40,625,412	$ -	$ -	$ 1,393,452	$ -	$ 1,393,452
2083	$ -	$ 41,844,175	$ 41,844,175	$ -	$ -	$ 1,435,255	$ -	$ 1,435,255
2084	$ -	$ 43,099,500	$ 43,099,500	$ -	$ -	$ 1,478,313	$ -	$ 1,478,313
2085	$ -	$ 44,392,485	$ 44,392,485	$ -	$ -	$ 1,522,662	$ -	$ 1,522,662
2086	$ -	$ 45,724,259	$ 45,724,259	$ -	$ -	$ 1,568,342	$ -	$ 1,568,342
2087	$ -	$ 47,095,987	$ 47,095,987	$ -	$ -	$ 1,615,392	$ -	$ 1,615,392
2088	$ -	$ 48,508,867	$ 48,508,867	$ -	$ -	$ 1,663,854	$ -	$ 1,663,854
2089	$ -	$ 49,964,133	$ 49,964,133	$ -	$ -	$ 1,713,770	$ -	$ 1,713,770
2090	$ -	$ 51,463,057	$ 51,463,057	$ -	$ -	$ 1,765,183	$ -	$ 1,765,183
2091	$ -	$ 53,006,949	$ 53,006,949	$ -	$ -	$ 1,818,138	$ -	$ 1,818,138
2092	$ -	$ 54,597,157	$ 54,597,157	$ -	$ -	$ 1,872,682	$ -	$ 1,872,682
2093	$ -	$ 56,235,072	$ 56,235,072	$ -	$ -	$ 1,928,863	$ -	$ 1,928,863
2094	$ -	$ 57,922,124	$ 57,922,124	$ -	$ -	$ 1,986,729	$ -	$ 1,986,729
2095	$ -	$ 59,659,788	$ 59,659,788	$ -	$ -	$ 2,046,331	$ -	$ 2,046,331
2096	$ -	$ 61,449,581	$ 61,449,581	$ -	$ -	$ 2,107,721	$ -	$ 2,107,721
2097	$ -	$ 63,293,069	$ 63,293,069	$ -	$ -	$ 2,170,952	$ -	$ 2,170,952
2098	$ -	$ 65,191,861	$ 65,191,861	$ -	$ -	$ 2,236,081	$ -	$ 2,236,081
2099	$ -	$ 67,147,617	$ 67,147,617	$ -	$ -	$ 2,303,163	$ -	$ 2,303,163
2100	$ -	$ 69,162,045	$ 69,162,045	$ -	$ -	$ 2,372,258	$ -	$ 2,372,258
2101	$ -	$ 71,236,906	$ 71,236,906	$ -	$ -	$ 2,443,426	$ -	$ 2,443,426
2102	$ -	$ 73,374,014	$ 73,374,014	$ -	$ -	$ 2,516,729	$ -	$ 2,516,729
2103	$ -	$ 75,575,234	$ 75,575,234	$ -	$ -	$ 2,592,231	$ -	$ 2,592,231
2104	$ -	$ 77,842,491	$ 77,842,491	$ -	$ -	$ 2,669,997	$ -	$ 2,669,997
2105	$ -	$ 80,177,766	$ 80,177,766	$ -	$ -	$ 2,750,097	$ -	$ 2,750,097
2106	$ -	$ 82,583,099	$ 82,583,099	$ -	$ -	$ 2,832,600	$ -	$ 2,832,600
2107	$ -	$ 85,060,592	$ 85,060,592	$ -	$ -	$ 2,917,578	$ -	$ 2,917,578
2108	$ -	$ 87,612,409	$ 87,612,409	$ -	$ -	$ 3,005,106	$ -	$ 3,005,106
2109	$ -	$ 90,240,782	$ 90,240,782	$ -	$ -	$ 3,095,259	$ -	$ 3,095,259
2110	$ -	$ 92,948,005	$ 92,948,005	$ -	$ -	$ 3,188,117	$ -	$ 3,188,117
2111	$ -	$ 95,736,445	$ 95,736,445	$ -	$ -	$ 3,283,760	$ -	$ 3,283,760
2112	$ -	$ 98,608,539	$ 98,608,539	$ -	$ -	$ 3,382,273	$ -	$ 3,382,273
2113	$ -	$ 101,566,795	$ 101,566,795	$ -	$ -	$ 3,483,741	$ -	$ 3,483,741
2114	$ -	$ 104,613,799	$ 104,613,799	$ -	$ -	$ 3,588,253	$ -	$ 3,588,253
2115	$ -	$ 107,752,213	$ 107,752,213	$ -	$ -	$ 3,695,901	$ -	$ 3,695,901
2116	$ -	$ 110,984,779	$ 110,984,779	$ -	$ -	$ 3,806,778	$ -	$ 3,806,778
2117	$ -	$ 114,314,322	$ 114,314,322	$ -	$ -	$ 3,920,981	$ -	$ 3,920,981
2118	$ -	$ 117,743,752	$ 117,743,752	$ -	$ -	$ 4,038,611	$ -	$ 4,038,611
2119	$ -	$ 121,276,065	$ 121,276,065	$ -	$ -	$ 4,159,769	$ -	$ 4,159,769
2120	$ -	$ 124,914,347	$ 124,914,347	$ -	$ -	$ 4,284,562	$ -	$ 4,284,562
2121	$ -	$ 128,661,777	$ 128,661,777	$ -	$ -	$ 4,413,099	$ -	$ 4,413,099
2122	$ -	$ 132,521,630	$ 132,521,630	$ -	$ -	$ 4,545,492	$ -	$ 4,545,492

** Employer contributions are 7.5% of payroll until 100% funded on an actuarial value of assets basis and 6.5% of payroll after. The employer contributions are assumed to change after 34 years.*

*** Equal to total contributions (14.00% of payroll for new employees; 13.00% of payroll after 34 years) net of normal cost and expenses(9.57% of payroll).*

Single Discount Rate Development
Projection of Plan Fiduciary Net Position (Dollars in Thousands)

Fiscal Year Ending		Projected Beginning Plan Net Position		Projected Total Contributions		Projected Benefit Payments		Projected Administrative Expenses		Projected Investment Earnings at 6.50%		Projected Ending Plan Net Position
		(a)		(b)		(c)		(d)		(e)		(f)=(a)+(b)-(c)-(d)+(e)
2023	$	26,034,185	$	1,009,550	$	1,858,330	$	13,062	$	1,664,653	$	26,836,996
2024	$	26,836,996	$	982,868	$	1,934,180	$	12,345	$	1,713,579	$	27,586,918
2025	$	27,586,918	$	959,791	$	2,010,692	$	11,694	$	1,759,159	$	28,283,482
2026	$	28,283,482	$	942,249	$	2,079,223	$	11,147	$	1,801,700	$	28,937,061
2027	$	28,937,061	$	926,767	$	2,147,129	$	10,635	$	1,841,531	$	29,547,595
2028	$	29,547,595	$	913,102	$	2,222,235	$	10,152	$	1,878,392	$	30,106,702
2029	$	30,106,702	$	901,366	$	2,294,355	$	9,702	$	1,912,066	$	30,616,077
2030	$	30,616,077	$	891,217	$	2,363,967	$	9,277	$	1,942,637	$	31,076,687
2031	$	31,076,687	$	882,560	$	2,429,809	$	8,874	$	1,970,207	$	31,490,771
2032	$	31,490,771	$	838,174	$	2,493,660	$	8,490	$	1,993,672	$	31,820,467
2033	$	31,820,467	$	831,798	$	2,555,420	$	8,119	$	2,012,935	$	32,101,661
2034	$	32,101,661	$	826,370	$	2,614,391	$	7,760	$	2,029,164	$	32,335,044
2035	$	32,335,044	$	821,930	$	2,671,100	$	7,412	$	2,042,389	$	32,520,851
2036	$	32,520,851	$	818,436	$	2,727,007	$	7,076	$	2,052,577	$	32,657,781
2037	$	32,657,781	$	815,765	$	2,780,941	$	6,747	$	2,059,677	$	32,745,535
2038	$	32,745,535	$	813,967	$	2,831,405	$	6,428	$	2,063,719	$	32,785,388
2039	$	32,785,388	$	812,964	$	2,876,889	$	6,116	$	2,064,833	$	32,780,180
2040	$	32,780,180	$	812,547	$	2,919,756	$	5,807	$	2,063,120	$	32,730,284
2041	$	32,730,284	$	812,615	$	2,959,561	$	5,499	$	2,058,615	$	32,636,454
2042	$	32,636,454	$	813,152	$	2,996,905	$	5,191	$	2,051,349	$	32,498,859
2043	$	32,498,859	$	814,197	$	3,031,569	$	4,883	$	2,041,339	$	32,317,943
2044	$	32,317,943	$	815,815	$	3,063,845	$	4,576	$	2,028,609	$	32,093,946
2045	$	32,093,946	$	818,028	$	3,093,233	$	4,272	$	2,013,190	$	31,827,659
2046	$	31,827,659	$	820,799	$	3,120,395	$	3,968	$	1,995,110	$	31,519,205
2047	$	31,519,205	$	824,193	$	3,145,722	$	3,665	$	1,974,369	$	31,168,380
2048	$	31,168,380	$	828,367	$	3,168,600	$	3,367	$	1,950,977	$	30,775,757
2049	$	30,775,757	$	833,434	$	3,188,288	$	3,075	$	1,924,998	$	30,342,826
2050	$	30,342,826	$	839,497	$	3,203,801	$	2,792	$	1,896,564	$	29,872,294
2051	$	29,872,294	$	846,617	$	3,216,353	$	2,517	$	1,865,815	$	29,365,856
2052	$	29,365,856	$	854,860	$	3,225,242	$	2,252	$	1,832,884	$	28,826,106
2053	$	28,826,106	$	864,355	$	3,230,279	$	1,998	$	1,797,951	$	28,256,135
2054	$	28,256,135	$	875,210	$	3,230,748	$	1,759	$	1,761,243	$	27,660,081
2055	$	27,660,081	$	887,497	$	3,226,793	$	1,534	$	1,723,026	$	27,042,277
2056	$	27,042,277	$	901,258	$	3,218,214	$	1,325	$	1,683,590	$	26,407,586
2057	$	26,407,586	$	722,527	$	3,204,641	$	1,132	$	1,637,058	$	25,561,398
2058	$	25,561,398	$	733,580	$	3,186,474	$	955	$	1,582,996	$	24,690,545
2059	$	24,690,545	$	746,088	$	3,162,395	$	795	$	1,527,566	$	23,801,009
2060	$	23,801,009	$	760,064	$	3,132,669	$	652	$	1,471,149	$	22,898,901
2061	$	22,898,901	$	775,534	$	3,096,655	$	526	$	1,414,163	$	21,991,417
2062	$	21,991,417	$	792,508	$	3,053,886	$	417	$	1,357,091	$	21,086,713
2063	$	21,086,713	$	810,950	$	3,004,567	$	323	$	1,300,456	$	20,193,229
2064	$	20,193,229	$	830,860	$	2,948,072	$	245	$	1,244,826	$	19,320,598
2065	$	19,320,598	$	852,189	$	2,884,982	$	181	$	1,190,807	$	18,478,431
2066	$	18,478,431	$	874,919	$	2,814,609	$	130	$	1,139,046	$	17,677,657
2067	$	17,677,657	$	899,001	$	2,736,671	$	91	$	1,090,261	$	16,930,157
2068	$	16,930,157	$	924,336	$	2,653,016	$	62	$	1,045,160	$	16,246,575
2069	$	16,246,575	$	950,876	$	2,564,338	$	40	$	1,004,414	$	15,637,487
2070	$	15,637,487	$	978,567	$	2,470,744	$	24	$	968,703	$	15,113,989
2071	$	15,113,989	$	1,007,372	$	2,372,897	$	14	$	938,728	$	14,687,178
2072	$	14,687,178	$	1,037,257	$	2,272,074	$	8	$	915,166	$	14,367,519

For purposes of this projection, we assumed the 13.0% statutory contribution rate would continue after the plan becomes fully funded.

Single Discount Rate Development
Projection of Plan Fiduciary Net Position (Dollars in Thousands) (Concluded)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 6.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2073	$ 14,367,519	$ 1,068,165	$ 2,169,238	$ 4	$ 898,667	$ 14,165,109
2074	$ 14,165,109	$ 1,100,084	$ 2,064,879	$ 2	$ 889,870	$ 14,090,182
2075	$ 14,090,182	$ 1,133,027	$ 1,959,262	$ -	$ 889,432	$ 14,153,379
2076	$ 14,153,379	$ 1,167,000	$ 1,852,778	$ -	$ 898,033	$ 14,365,634
2077	$ 14,365,634	$ 1,202,005	$ 1,745,913	$ -	$ 916,367	$ 14,738,093
2078	$ 14,738,093	$ 1,238,064	$ 1,639,053	$ -	$ 945,149	$ 15,282,253
2079	$ 15,282,253	$ 1,275,206	$ 1,532,586	$ -	$ 985,113	$ 16,009,986
2080	$ 16,009,986	$ 1,313,462	$ 1,426,923	$ -	$ 1,037,020	$ 16,933,545
2081	$ 16,933,545	$ 1,352,866	$ 1,322,508	$ -	$ 1,101,651	$ 18,065,554
2082	$ 18,065,554	$ 1,393,452	$ 1,219,809	$ -	$ 1,179,815	$ 19,419,012
2083	$ 19,419,012	$ 1,435,255	$ 1,119,309	$ -	$ 1,272,342	$ 21,007,300
2084	$ 21,007,300	$ 1,478,313	$ 1,021,496	$ -	$ 1,380,087	$ 22,844,204
2085	$ 22,844,204	$ 1,522,662	$ 926,845	$ -	$ 1,503,932	$ 24,943,953
2086	$ 24,943,953	$ 1,568,342	$ 835,816	$ -	$ 1,644,789	$ 27,321,268
2087	$ 27,321,268	$ 1,615,392	$ 748,837	$ -	$ 1,803,602	$ 29,991,425
2088	$ 29,991,425	$ 1,663,854	$ 666,300	$ -	$ 1,981,353	$ 32,970,332
2089	$ 32,970,332	$ 1,713,770	$ 588,545	$ -	$ 2,179,066	$ 36,274,623
2090	$ 36,274,623	$ 1,765,183	$ 515,858	$ -	$ 2,397,814	$ 39,921,762
2091	$ 39,921,762	$ 1,818,138	$ 448,460	$ -	$ 2,638,728	$ 43,930,168
2092	$ 43,930,168	$ 1,872,682	$ 386,505	$ -	$ 2,903,001	$ 48,319,346
2093	$ 48,319,346	$ 1,928,863	$ 330,073	$ -	$ 3,191,900	$ 53,110,036
2094	$ 53,110,036	$ 1,986,729	$ 279,169	$ -	$ 3,506,775	$ 58,324,371
2095	$ 58,324,371	$ 2,046,331	$ 233,723	$ -	$ 3,849,067	$ 63,986,046
2096	$ 63,986,046	$ 2,107,721	$ 193,588	$ -	$ 4,220,323	$ 70,120,502
2097	$ 70,120,502	$ 2,170,952	$ 158,549	$ -	$ 4,622,206	$ 76,755,111
2098	$ 76,755,111	$ 2,236,081	$ 128,326	$ -	$ 5,056,506	$ 83,919,372
2099	$ 83,919,372	$ 2,303,163	$ 102,585	$ -	$ 5,525,152	$ 91,645,102
2100	$ 91,645,102	$ 2,372,258	$ 80,952	$ -	$ 6,030,227	$ 99,966,635
2101	$ 99,966,635	$ 2,443,426	$ 63,022	$ -	$ 6,573,977	$ 108,921,016
2102	$ 108,921,016	$ 2,516,729	$ 48,378	$ -	$ 7,158,825	$ 118,548,192
2103	$ 118,548,192	$ 2,592,231	$ 36,596	$ -	$ 7,787,383	$ 128,891,210
2104	$ 128,891,210	$ 2,669,997	$ 27,267	$ -	$ 8,462,465	$ 139,996,405
2105	$ 139,996,405	$ 2,750,097	$ 20,002	$ -	$ 9,187,098	$ 151,913,598
2106	$ 151,913,598	$ 2,832,600	$ 14,440	$ -	$ 9,964,532	$ 164,696,290
2107	$ 164,696,290	$ 2,917,578	$ 10,257	$ -	$ 10,798,259	$ 178,401,870
2108	$ 178,401,870	$ 3,005,106	$ 7,168	$ -	$ 11,692,021	$ 193,091,829
2109	$ 193,091,829	$ 3,095,259	$ 4,929	$ -	$ 12,649,824	$ 208,831,983
2110	$ 208,831,983	$ 3,188,117	$ 3,336	$ -	$ 13,675,955	$ 225,692,719
2111	$ 225,692,719	$ 3,283,760	$ 2,224	$ -	$ 14,774,998	$ 243,749,253
2112	$ 243,749,253	$ 3,382,273	$ 1,462	$ -	$ 15,951,848	$ 263,081,912
2113	$ 263,081,912	$ 3,483,741	$ 950	$ -	$ 17,211,733	$ 283,776,436
2114	$ 283,776,436	$ 3,588,253	$ 611	$ -	$ 18,560,231	$ 305,924,309
2115	$ 305,924,309	$ 3,695,901	$ 390	$ -	$ 20,003,293	$ 329,623,113
2116	$ 329,623,113	$ 3,806,778	$ 248	$ -	$ 21,547,267	$ 354,976,910
2117	$ 354,976,910	$ 3,920,981	$ 157	$ -	$ 23,198,920	$ 382,096,654
2118	$ 382,096,654	$ 4,038,611	$ 100	$ -	$ 24,965,468	$ 411,100,633
2119	$ 411,100,633	$ 4,159,769	$ 63	$ -	$ 26,854,603	$ 442,114,942
2120	$ 442,114,942	$ 4,284,562	$ 40	$ -	$ 28,874,526	$ 475,273,990
2121	$ 475,273,990	$ 4,413,099	$ 26	$ -	$ 31,033,976	$ 510,721,039
2122	$ 510,721,039	$ 4,545,492	$ 39	$ -	$ 33,342,269	$ 548,608,761

For purposes of this projection, we assumed the 13.0% statutory contribution rate would continue after the plan becomes fully funded.

Single Discount Rate Development
Present Values of Projected Benefit Payments
(Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
2023	$ 26,034,185	$ 1,858,330	$ 1,858,330	$ -	$ 1,800,728	$ -	$ 1,800,728
2024	$ 26,836,996	$ 1,934,180	$ 1,934,180	$ -	$ 1,759,837	$ -	$ 1,759,837
2025	$ 27,586,918	$ 2,010,692	$ 2,010,692	$ -	$ 1,717,796	$ -	$ 1,717,796
2026	$ 28,283,481	$ 2,079,223	$ 2,079,223	$ -	$ 1,667,928	$ -	$ 1,667,928
2027	$ 28,937,061	$ 2,147,129	$ 2,147,129	$ -	$ 1,617,279	$ -	$ 1,617,279
2028	$ 29,547,596	$ 2,222,235	$ 2,222,235	$ -	$ 1,571,691	$ -	$ 1,571,691
2029	$ 30,106,702	$ 2,294,355	$ 2,294,355	$ -	$ 1,523,660	$ -	$ 1,523,660
2030	$ 30,616,077	$ 2,363,967	$ 2,363,967	$ -	$ 1,474,074	$ -	$ 1,474,074
2031	$ 31,076,687	$ 2,429,809	$ 2,429,809	$ -	$ 1,422,658	$ -	$ 1,422,658
2032	$ 31,490,771	$ 2,493,660	$ 2,493,660	$ -	$ 1,370,932	$ -	$ 1,370,932
2033	$ 31,820,466	$ 2,555,420	$ 2,555,420	$ -	$ 1,319,142	$ -	$ 1,319,142
2034	$ 32,101,659	$ 2,614,391	$ 2,614,391	$ -	$ 1,267,214	$ -	$ 1,267,214
2035	$ 32,335,042	$ 2,671,100	$ 2,671,100	$ -	$ 1,215,682	$ -	$ 1,215,682
2036	$ 32,520,849	$ 2,727,007	$ 2,727,007	$ -	$ 1,165,377	$ -	$ 1,165,377
2037	$ 32,657,779	$ 2,780,941	$ 2,780,941	$ -	$ 1,115,893	$ -	$ 1,115,893
2038	$ 32,745,533	$ 2,831,405	$ 2,831,405	$ -	$ 1,066,800	$ -	$ 1,066,800
2039	$ 32,785,386	$ 2,876,889	$ 2,876,889	$ -	$ 1,017,782	$ -	$ 1,017,782
2040	$ 32,780,178	$ 2,919,756	$ 2,919,756	$ -	$ 969,903	$ -	$ 969,903
2041	$ 32,730,282	$ 2,959,561	$ 2,959,561	$ -	$ 923,123	$ -	$ 923,123
2042	$ 32,636,452	$ 2,996,905	$ 2,996,905	$ -	$ 877,719	$ -	$ 877,719
2043	$ 32,498,857	$ 3,031,569	$ 3,031,569	$ -	$ 833,682	$ -	$ 833,682
2044	$ 32,317,941	$ 3,063,845	$ 3,063,845	$ -	$ 791,134	$ -	$ 791,134
2045	$ 32,093,944	$ 3,093,233	$ 3,093,233	$ -	$ 749,974	$ -	$ 749,974
2046	$ 31,827,658	$ 3,120,395	$ 3,120,395	$ -	$ 710,385	$ -	$ 710,385
2047	$ 31,519,204	$ 3,145,722	$ 3,145,722	$ -	$ 672,442	$ -	$ 672,442
2048	$ 31,168,378	$ 3,168,600	$ 3,168,600	$ -	$ 635,993	$ -	$ 635,993
2049	$ 30,775,755	$ 3,188,288	$ 3,188,288	$ -	$ 600,887	$ -	$ 600,887
2050	$ 30,342,824	$ 3,203,801	$ 3,203,801	$ -	$ 566,959	$ -	$ 566,959
2051	$ 29,872,293	$ 3,216,353	$ 3,216,353	$ -	$ 534,441	$ -	$ 534,441
2052	$ 29,365,855	$ 3,225,242	$ 3,225,242	$ -	$ 503,210	$ -	$ 503,210
2053	$ 28,826,105	$ 3,230,279	$ 3,230,279	$ -	$ 473,235	$ -	$ 473,235
2054	$ 28,256,133	$ 3,230,748	$ 3,230,748	$ -	$ 444,417	$ -	$ 444,417
2055	$ 27,660,078	$ 3,226,793	$ 3,226,793	$ -	$ 416,782	$ -	$ 416,782
2056	$ 27,042,274	$ 3,218,214	$ 3,218,214	$ -	$ 390,304	$ -	$ 390,304
2057	$ 26,407,583	$ 3,204,641	$ 3,204,641	$ -	$ 364,937	$ -	$ 364,937
2058	$ 25,561,395	$ 3,186,474	$ 3,186,474	$ -	$ 340,721	$ -	$ 340,721
2059	$ 24,690,542	$ 3,162,395	$ 3,162,395	$ -	$ 317,509	$ -	$ 317,509
2060	$ 23,801,006	$ 3,132,669	$ 3,132,669	$ -	$ 295,328	$ -	$ 295,328
2061	$ 22,898,898	$ 3,096,655	$ 3,096,655	$ -	$ 274,115	$ -	$ 274,115
2062	$ 21,991,414	$ 3,053,886	$ 3,053,886	$ -	$ 253,830	$ -	$ 253,830
2063	$ 21,086,711	$ 3,004,567	$ 3,004,567	$ -	$ 234,489	$ -	$ 234,489
2064	$ 20,193,226	$ 2,948,072	$ 2,948,072	$ -	$ 216,038	$ -	$ 216,038
2065	$ 19,320,595	$ 2,884,982	$ 2,884,982	$ -	$ 198,511	$ -	$ 198,511
2066	$ 18,478,428	$ 2,814,609	$ 2,814,609	$ -	$ 181,849	$ -	$ 181,849
2067	$ 17,677,654	$ 2,736,671	$ 2,736,671	$ -	$ 166,022	$ -	$ 166,022
2068	$ 16,930,153	$ 2,653,016	$ 2,653,016	$ -	$ 151,124	$ -	$ 151,124
2069	$ 16,246,572	$ 2,564,338	$ 2,564,338	$ -	$ 137,157	$ -	$ 137,157
2070	$ 15,637,485	$ 2,470,744	$ 2,470,744	$ -	$ 124,086	$ -	$ 124,086
2071	$ 15,113,988	$ 2,372,897	$ 2,372,897	$ -	$ 111,898	$ -	$ 111,898
2072	$ 14,687,177	$ 2,272,074	$ 2,272,074	$ -	$ 100,604	$ -	$ 100,604

Single Discount Rate Development
Present Values of Projected Benefit Payments
(Dollars in Thousands) (Concluded)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
2073	$ 14,367,518	$ 2,169,238	$ 2,169,238	$ -	$ 90,189	$ -	$ 90,189
2074	$ 14,165,108	$ 2,064,879	$ 2,064,879	$ -	$ 80,610	$ -	$ 80,610
2075	$ 14,090,181	$ 1,959,262	$ 1,959,262	$ -	$ 71,819	$ -	$ 71,819
2076	$ 14,153,378	$ 1,852,778	$ 1,852,778	$ -	$ 63,770	$ -	$ 63,770
2077	$ 14,365,632	$ 1,745,913	$ 1,745,913	$ -	$ 56,425	$ -	$ 56,425
2078	$ 14,738,092	$ 1,639,053	$ 1,639,053	$ -	$ 49,738	$ -	$ 49,738
2079	$ 15,282,252	$ 1,532,586	$ 1,532,586	$ -	$ 43,669	$ -	$ 43,669
2080	$ 16,009,985	$ 1,426,923	$ 1,426,923	$ -	$ 38,177	$ -	$ 38,177
2081	$ 16,933,543	$ 1,322,508	$ 1,322,508	$ -	$ 33,224	$ -	$ 33,224
2082	$ 18,065,552	$ 1,219,809	$ 1,219,809	$ -	$ 28,773	$ -	$ 28,773
2083	$ 19,419,011	$ 1,119,309	$ 1,119,309	$ -	$ 24,791	$ -	$ 24,791
2084	$ 21,007,299	$ 1,021,496	$ 1,021,496	$ -	$ 21,244	$ -	$ 21,244
2085	$ 22,844,204	$ 926,845	$ 926,845	$ -	$ 18,099	$ -	$ 18,099
2086	$ 24,943,954	$ 835,816	$ 835,816	$ -	$ 15,325	$ -	$ 15,325
2087	$ 27,321,269	$ 748,837	$ 748,837	$ -	$ 12,893	$ -	$ 12,893
2088	$ 29,991,427	$ 666,300	$ 666,300	$ -	$ 10,771	$ -	$ 10,771
2089	$ 32,970,334	$ 588,545	$ 588,545	$ -	$ 8,934	$ -	$ 8,934
2090	$ 36,274,624	$ 515,858	$ 515,858	$ -	$ 7,352	$ -	$ 7,352
2091	$ 39,921,763	$ 448,460	$ 448,460	$ -	$ 6,002	$ -	$ 6,002
2092	$ 43,930,170	$ 386,505	$ 386,505	$ -	$ 4,857	$ -	$ 4,857
2093	$ 48,319,349	$ 330,073	$ 330,073	$ -	$ 3,895	$ -	$ 3,895
2094	$ 53,110,039	$ 279,169	$ 279,169	$ -	$ 3,093	$ -	$ 3,093
2095	$ 58,324,373	$ 233,723	$ 233,723	$ -	$ 2,431	$ -	$ 2,431
2096	$ 63,986,047	$ 193,588	$ 193,588	$ -	$ 1,891	$ -	$ 1,891
2097	$ 70,120,502	$ 158,549	$ 158,549	$ -	$ 1,454	$ -	$ 1,454
2098	$ 76,755,112	$ 128,326	$ 128,326	$ -	$ 1,105	$ -	$ 1,105
2099	$ 83,919,373	$ 102,585	$ 102,585	$ -	$ 830	$ -	$ 830
2100	$ 91,645,103	$ 80,952	$ 80,952	$ -	$ 615	$ -	$ 615
2101	$ 99,966,637	$ 63,022	$ 63,022	$ -	$ 449	$ -	$ 449
2102	$ 108,921,017	$ 48,378	$ 48,378	$ -	$ 324	$ -	$ 324
2103	$ 118,548,192	$ 36,596	$ 36,596	$ -	$ 230	$ -	$ 230
2104	$ 128,891,210	$ 27,267	$ 27,267	$ -	$ 161	$ -	$ 161
2105	$ 139,996,405	$ 20,002	$ 20,002	$ -	$ 111	$ -	$ 111
2106	$ 151,913,598	$ 14,440	$ 14,440	$ -	$ 75	$ -	$ 75
2107	$ 164,696,290	$ 10,257	$ 10,257	$ -	$ 50	$ -	$ 50
2108	$ 178,401,871	$ 7,168	$ 7,168	$ -	$ 33	$ -	$ 33
2109	$ 193,091,829	$ 4,929	$ 4,929	$ -	$ 21	$ -	$ 21
2110	$ 208,831,983	$ 3,336	$ 3,336	$ -	$ 13	$ -	$ 13
2111	$ 225,692,718	$ 2,224	$ 2,224	$ -	$ 8	$ -	$ 8
2112	$ 243,749,252	$ 1,462	$ 1,462	$ -	$ 5	$ -	$ 5
2113	$ 263,081,911	$ 950	$ 950	$ -	$ 3	$ -	$ 3
2114	$ 283,776,435	$ 611	$ 611	$ -	$ 2	$ -	$ 2
2115	$ 305,924,309	$ 390	$ 390	$ -	$ 1	$ -	$ 1
2116	$ 329,623,114	$ 248	$ 248	$ -	$ 1	$ -	$ 1
2117	$ 354,976,911	$ 157	$ 157	$ -	$ -	$ -	$ -
2118	$ 382,096,655	$ 100	$ 100	$ -	$ -	$ -	$ -
2119	$ 411,100,634	$ 63	$ 63	$ -	$ -	$ -	$ -
2120	$ 442,114,944	$ 40	$ 40	$ -	$ -	$ -	$ -
2121	$ 475,273,992	$ 26	$ 26	$ -	$ -	$ -	$ -
2122	$ 510,721,042	$ 39	$ 39	$ -	$ -	$ -	$ -
				Totals	$ 39,360,746	$ -	$ 39,360,746

SECTION H

GLOSSARY OF TERMS

Glossary of Terms

Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically, the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year).
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.
Deferred Inflows and Outflows	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
Discount Rate	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: 1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and 2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Glossary of Terms

Entry Age Actuarial Cost Method (EAN)	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit age(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.
GASB	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.
Fiduciary Net Position	The fiduciary net position is the value of the assets of the trust.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contribution Entities	Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statement plan members are not considered non-employer contribution entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.

Glossary of Terms

Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
Total Pension Expense	The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year: 1. Service Cost 2. Interest on the Total Pension Liability 3. Current-Period Benefit Changes 4. Employee Contributions (made negative for addition here) 5. Projected Earnings on Plan Investments (made negative for addition here) 6. Pension Plan Administrative Expense 7. Other Changes in Plan Fiduciary Net Position 8. Recognition of Outflow (Inflow) of Resources due to Liabilities 9. Recognition of Outflow (Inflow) of Resources due to Assets
Total Pension Liability (TPL)	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
Unfunded Actuarial Accrued Liability (UAAL)	The UAAL is the difference between actuarial accrued liability and valuation assets.
Valuation Assets	The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of the GASB Statement No. 67, the valuation asset is equal to the market value of assets.

Public Employees Retirement Association of Minnesota

Public Employees Police and Fire Plan
GASB Statements No. 67 and No. 68 Accounting and Financial Reporting for Pensions
June 30, 2022

| P: 800.521.0498 | www.grsconsulting.com

November 8, 2022

Public Employees Retirement Association of Minnesota
Public Employees Police and Fire Plan
St. Paul, Minnesota

Dear Trustees of the Public Employees Police and Fire Plan:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the Public Employees Police and Fire Plan, as amended by Statement No. 82. These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust. GASB Statement No. 82 is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The Net Pension Liability is not an appropriate measure for measuring the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligations. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. The calculation of the plan's liability for this report may not be applicable for purposes of funding the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statements No. 67 and No. 68 may produce significantly different results. The information in this report is calculated on a total plan basis. PERA is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the Public Employees Retirement Association (PERA) only in its entirety and only with the permission of PERA. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by PERA, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not audited.

This report complements the actuarial valuation report for funding purposes that was or will be provided to the Plan and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2022 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

277 Coon Rapids Boulevard | Suite 212 | Coon Rapids, Minnesota 55433-2629

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the Public Employees Police and Fire Plan as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

This report reflects the impact of COVID-19 through June 30, 2022. It does not reflect the ongoing impact of COVID-19, which is likely to influence demographic and investment experience, at least in the short term. We will continue to monitor these developments and their impact on the plan.

This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

Brian B. Murphy, Bonita J. Wurst and Sheryl L. Christensen are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

Brian B. Murphy

Brian B. Murphy, FSA, EA, FCA, MAAA, PhD

Bonita J. Wurst

Bonita J. Wurst, ASA, EA, FCA, MAAA

Sheryl Christensen

Sheryl L. Christensen, FSA, EA, FCA, MAAA

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SECTION A

EXECUTIVE SUMMARY

Executive Summary
as of June 30, 2022 (Dollars in Thousands)

	2022
Actuarial Valuation Date	June 30, 2022
Measurement Date of the Net Pension Liability	June 30, 2022
Employer's Fiscal Year Ending Date (Reporting Date)	Varies by Employer
Membership	
Number of	
- Service Retirements	8,236
- Survivors	1,959
- Disability Retirements	1,912
- Deferred Retirements	1,864
- Terminated Other Non-Vested	957
- Active Members	11,629
- Total	26,557
Covered Payroll	$ 1,127,314
Net Pension Liability	
Total Pension Liability	$ 14,767,098
Plan Fiduciary Net Position	$ 10,415,493
Net Pension Liability	$ 4,351,605
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	70.53%
Net Pension Liability as a Percentage of Covered Payroll	386.02%
Development of the Single Discount Rate	
Single Discount Rate	5.40%
Long-Term Expected Rate of Investment Return	6.50%
Long-Term Municipal Bond Rate*	3.69%
Last year ending June 30 in the 2023 to 2122 projection period for which projected benefit payments are fully funded	2060
Total Pension Expense/(Income)	**$ 328,316**

Deferred Outflows and Inflows by Source Arising from Current and Prior Periods to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	$ 265,789	$ -
Changes in assumptions	$ 2,561,589	$ 26,160
Net difference between projected and actual earnings on pension plan investments	$ 1,263,801	$ 1,205,473
Total	$ 4,091,179	$ 1,231,633

* Source: *Based on the 20-Year Municipal GO Index of mixed maturity general obligation municipal bonds as of the weekly rate closest to but not later than the Measurement Date.*

Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans* establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions* establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements. Governmental Accounting Standards Board (GASB) Statement No. 82, *Pension Issues*, is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state and local governmental employers to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to the Public Employees Police and Fire Plan subsequent to the measurement date of June 30, 2022.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position in accordance with GASB Statement No. 67. The Statement of Fiduciary Net Position presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The Statement of Changes in Fiduciary Net Position presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes to the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

Both GASB Statements No. 67 and No. 68 require the notes to the financial statements for the employers and pension plans to include certain descriptive information about the pension plans through which the pension benefits are provided. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The classes of employees and number of members covered by the pension plan;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- The pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- The net pension liability using a discount rate that is 1% higher and 1% lower than the current discount rate used to calculate the total pension liability and net pension liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- The composition of the pension plan's Board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

Required Supplementary Information

Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability;
- Information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- Comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. For employer reporting, the net pension liability and pension expense should be measured as of a date (measurement date) no earlier than the end of the employer's prior fiscal year, consistently applied from period to period. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2022 and a measurement date of June 30, 2022.

Measurement of the Net Pension Liability

The net pension liability is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if there are no changes in benefits, Chapter 356 required contributions are made, and all actuarial assumptions are met (including the assumption of the plan earning 7.50% on an actuarial value of assets basis, as prescribed by statutes), then the following outcomes are expected:

1. The normal cost of the plan is expected to remain approximately level as a percent of pay,
2. The funded status of the plan is expected to gradually improve and is expected to be 100% funded within the next 26 years, and
3. The unfunded liability will grow initially as a dollar amount before beginning to decline.

The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the market value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

(1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations; in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.
(2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
(3) The measurement would produce a different result if the actuarial value of assets were used instead of the market value of assets.

Limitation of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 6.50%; the municipal bond rate is 3.69% (based on the weekly rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index") and the resulting single discount rate is 5.40%. PERA staff selected the long-term expected rate of investment return of 6.50% based on input from GRS that the proposed selection would be reasonable for the purpose of the measurement.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense under GASB Statement No. 68
Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Expense		
1. Service Cost	$	282,658
2. Interest on the Total Pension Liability	$	779,519
3. Current-Period Benefit Changes	$	-
4. Employee Contributions (made negative for addition here)	$	(133,023)
5. Projected Earnings on Plan Investments (made negative for addition here)	$	(731,722)
6. Pension Plan Administrative Expense	$	1,634
7. Other Changes in Plan Fiduciary Net Position	$	20
8. Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		
Arising from Current Reporting Period	$	31,262
9. Recognition of Outflow (Inflow) of Resources due to assumption changes		
Arising from Current Reporting Period	$	330,801
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.50%) and actual earnings on Pension Plan Investments		
Arising from Current Reporting Period	$	286,533
11. **Increase/(Decrease) from Experience in the Current Reporting Period**	**$**	**847,682**
12. Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		
Arising from Prior Reporting Periods	$	38,773
13. Recognition of Outflow (Inflow) of Resources due to assumption changes		
Arising from Prior Reporting Periods	$	(171,050)
14. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on Pension Plan Investments		
Arising from Prior Reporting Periods	$	(387,089)
15. Total Pension Expense / (Income)	**$**	**328,316**

Recognition of Deferred Outflows and Inflows of Resources

Differences between expected and actual experience and changes in assumptions are recognized in pension expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pension through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the current measurement period, the expected remaining service lives of all active employees in the plan was approximately 153,114 years. Additionally, the total plan membership (active employees and inactive employees) was 26,086. As a result, the average of the expected remaining service lives for purposes of recognizing the applicable deferred outflows and inflows of resources established in the current measurement period is 6.00 years (rounded).

Additionally, differences between projected and actual earnings on plan investments should be recognized in pension expense using a systematic and rational method over a closed five-year period. For this purpose, the deferred outflows and inflows of resources are recognized in the pension expense as a level dollar amount over the closed period identified above.

Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Outflows (Inflows) of Resources due to Liabilities		
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$	187,572
2. Assumption Changes (gains) or losses		1,984,805
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		6.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	$	31,262
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes		330,801
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities		362,063
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	$	156,310
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes		1,654,004
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities		1,810,314
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses		1,432,664
2. Recognition period for Assets {in years}		5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets		286,533
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets		1,146,131

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	$ 627,733	$ 397,947	$ 229,786
2. Due to Assets	347,123	447,679	(100,556)
3. Total	$ 974,856	$ 845,626	$ 129,230

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	$ 70,035	$ -	$ 70,035
2. Assumption Changes	557,698	397,947	159,751
3. Net Difference between projected and actual earnings on pension plan investments	347,123	447,679	(100,556)
4. Total	$ 974,856	$ 845,626	$ 129,230

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	$ 265,789	$ -	$ 265,789
2. Assumption Changes	2,561,589	26,160	2,535,429
3. Net Difference between projected and actual earnings on pension plan investments	1,263,801	1,205,473	58,328
4. Total	$ 4,091,179	$ 1,231,633	$ 2,859,546

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2023	$ 552,234
2024	552,237
2025	496,059
2026	896,954
2027	362,062
Thereafter	0
Total	$ 2,859,546

Recognition of Deferred Outflows and Inflows of Resources
Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) Due to Differences Between Expected and Actual Experience on Liabilities					
2017	$ 37,292	6.0000	$ 6,216	$ 0	0.0000
2018	21,720	6.0000	3,620	3,620	1.0000
2019	14,491	6.0000	2,415	4,831	2.0000
2020	30,348	6.0000	5,058	15,174	3.0000
2021	128,782	6.0000	21,464	85,854	4.0000
2022	187,572	6.0000	31,262	156,310	5.0000
Total			**$ 70,035**	**$ 265,789**	
Deferred Outflow (Inflow) Due to Assumption Changes					
2017	$ (2,300,201)	6.0000	$ (383,366)	$ 0	0.0000
2018	(42,807)	6.0000	(7,134)	(7,134)	1.0000
2019	(19,898)	6.0000	(3,316)	(6,634)	2.0000
2020	(24,785)	6.0000	(4,131)	(12,392)	3.0000
2021	1,361,379	6.0000	226,897	907,585	4.0000
2022	1,984,805	6.0000	330,801	1,654,004	5.0000
Total			**$ 159,751**	**$ 2,535,429**	
Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments					
2018	$ (229,273)	5.0000	$ (45,854)	$ 0	0.0000
2019	17,561	5.0000	3,512	3,513	1.0000
2020	285,391	5.0000	57,078	114,157	2.0000
2021	(2,009,123)	5.0000	(401,825)	(1,205,473)	3.0000
2022	1,432,664	5.0000	286,533	1,146,131	4.0000
Total			**$ (100,556)**	**$ 58,328**	
Deferred Outflow (Inflow) Due to All Sources					
Total			**$ 129,230**	**$ 2,859,546**	

Statement of Fiduciary Net Position
(Dollars in Thousands)

	Market Value			
Assets in Trust	**June 30, 2022**		**June 30, 2021**	
Cash, Equivalents, Short Term Securities	$	198,592	$	181,935
Fixed Income	$	2,385,899	$	2,585,324
Equity	$	5,210,590	$	6,647,336
SBI Alternative	$	2,621,319	$	1,978,079
Other	$	-	$	-
Total Assets in Trust	**$**	**10,416,400**	**$**	**11,392,674**
Assets Receivable	$	5,652	$	12,147 *
Amounts Payable	$	6,559	$	6,720
Net Position Restricted for Pensions	**$**	**10,415,493**	**$**	**11,398,101**

** Includes $7.679 million contribution receivable from Minneapolis to be paid July 15, 2022.*

Statement of Changes in Fiduciary Net Position
(Dollars in Thousands)

Change in Assets	**Market Value**			
Year Ending		**June 30, 2022**		**June 30, 2021**
1. Fund balance at market value at beginning of year	$	11,398,101	$	8,973,460
2. Contributions				
a. Member	$	133,023	$	129,351
b. Employer	$	206,416	$	201,129 *
c. Other sources	$	18,000	$	18,000
d. Total contributions	$	357,439	$	348,480
3. Investment income				
a. Investment income/(loss)	$	(688,884)	$	2,683,628
b. Investment expenses	$	(12,058)	$	(10,802)
c. Net subtotal	$	(700,942)	$	2,672,826
4. Other	$	(20)	$	23
5. Total additions: *(2.d.) + (3.c.) + (4.)*	**$**	**(343,523)**	**$**	**3,021,329**
6. Benefits Paid				
a. Annuity benefits	$	(633,255)	$	(592,687)
b. Refunds	$	(4,196)	$	(3,060)
c. Total benefits paid	$	(637,451)	$	(595,747)
7. Expenses				
a. Other	$	-	$	-
b. Administrative	$	(1,634)	$	(941)
c. Total expenses	$	(1,634)	$	(941)
8. Total deductions: *(6.c.) + (7.c.)*	**$**	**(639,085)**	**$**	**(596,688)**
9. Net increase (decrease) in net position: *(5) + (8)*	$	(982,608)	$	2,424,641
10. Net position restricted for pensions	**$**	**10,415,493**	**$**	**11,398,101**
11. State Board of Investment calculated investment return		-6.2%		30.3%

** Includes $7.679 million contribution receivable from Minneapolis to be paid July 15, 2022.*

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios
Current Period
Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Total pension liability		
1. Service cost	$	282,658
2. Interest on the total pension liability	$	779,519
3. Changes of benefit terms	$	-
4. Difference between expected and actual experience of the total pension liability	$	187,572
5. Changes of assumptions	$	1,984,805
6. Benefit payments, including refunds of employee contributions	$	(637,451)
7. Net change in total pension liability	$	2,597,103
8. Total pension liability – beginning	$	12,169,995
9. Total pension liability – ending	**$**	**14,767,098**
B. Plan fiduciary net position		
1. Contributions – employer	$	224,416
2. Contributions – employee	$	133,023
3. Net investment income	$	(700,942)
4. Benefit payments, including refunds of employee contributions	$	(637,451)
5. Pension Plan administrative expense	$	(1,634)
6. Other	$	(20)
7. Net change in plan fiduciary net position	$	(982,608)
8. Plan fiduciary net position – beginning	$	11,398,101
9. Plan fiduciary net position – ending	**$**	**10,415,493**
C. Net pension liability	**$**	**4,351,605**
D. Plan fiduciary net position as a percentage of the total pension liability		**70.53%**
E. Covered-employee payroll*	**$**	**1,127,314**
F. Net pension liability as a percentage of covered-employee payroll		**386.02%**

**Assumed equal to actual member contributions divided by employee contribution rate.*

Schedules of Required Supplementary Information
Schedule of Changes in Net Pension Liability and Related Ratios Multiyear
(Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

Fiscal year ending June 30,	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Total Pension Liability										
Service Cost	$ 282,658	$ 226,012	$ 217,127	$ 209,098	$ 203,131	$ 318,401	$ 194,352	$ 187,959	$ 169,124	
Interest on the Total Pension Liability	$ 779,519	$ 758,002	$ 729,945	$ 703,640	$ 682,903	$ 616,740	$ 658,198	$ 648,233	$ 598,165	
Benefit Changes	$ -	$ -	$ -	$ -	$ (50,771)	$ -	$ -	$ -	$ -	
Difference between Expected and Actual Experience	$ 187,572	$ 128,782	$ 30,348	$ 14,491	$ 21,720	$ 37,292	$ (375,575)	$ (221,112)	$ 1,813	
Assumption Changes	$ 1,984,805	$ 1,361,379	$ (24,785)	$ (19,898)	$ (42,807)	$ (2,300,201)	$ 2,650,350	$ -	$ 323,945	
Benefit Payments	$ (633,255)	$ (592,687)	$ (567,040)	$ (547,699)	$ (528,468)	$ (512,379)	$ (498,608)	$ (481,330)	$ (452,462)	
Refunds	$ (4,196)	$ (3,060)	$ (3,181)	$ (3,283)	$ (1,902)	$ (2,119)	$ (2,391)	$ (1,953)	$ (1,633)	
Net Change in Total Pension Liability	$ 2,597,103	$ 1,878,428	$ 382,414	$ 356,349	$ 283,806	$ (1,842,266)	$ 2,626,326	$ 131,797	$ 638,952	
Total Pension Liability - Beginning	$ 12,169,995	$ 10,291,567	$ 9,909,153	$ 9,552,804	$ 9,268,998	$ 11,111,264	$ 8,484,938	$ 8,353,141	$ 7,714,189	
Total Pension Liability - Ending (a)	$ 14,767,098	$ 12,169,995	$ 10,291,567	$ 9,909,153	$ 9,552,804	$ 9,268,998	$ 11,111,264	$ 8,484,938	$ 8,353,141	
Plan Fiduciary Net Position										
Employer Contributions	$ 224,416	$ 219,129	$ 207,319	$ 188,317	$ 179,781	$ 175,329	$ 165,065	$ 153,317	$ 141,632	
Employee Contributions	$ 133,023	$ 129,351	$ 123,525	$ 111,762	$ 105,479	$ 101,984	$ 95,172	$ 88,733	$ 81,213	
Pension Plan Net Investment Income	$ (700,942)	$ 2,672,826	$ 368,949	$ 609,512	$ 813,966	$ 1,058,942	$ (8,949)	$ 317,556	$ 1,158,389	
Benefit Payments	$ (633,255)	$ (592,687)	$ (567,040)	$ (547,699)	$ (528,468)	$ (512,379)	$ (498,608)	$ (481,330)	$ (452,462)	
Refunds	$ (4,196)	$ (3,060)	$ (3,181)	$ (3,283)	$ (1,902)	$ (2,119)	$ (2,391)	$ (1,953)	$ (1,633)	
Pension Plan Administrative Expense	$ (1,634)	$ (941)	$ (924)	$ (1,018)	$ (886)	$ (992)	$ (906)	$ (803)	$ (798)	
Other	$ (20)	$ 23	$ 260	$ 54	$ 58	$ 24	$ 3	$ 84	$ 18	
Net Change in Plan Fiduciary Net Position	$ (982,608)	$ 2,424,641	$ 128,908	$ 357,645	$ 568,028	$ 820,789	$ (250,614)	$ 75,604	$ 926,359	
Plan Fiduciary Net Position - Beginning	$ 11,398,101	$ 8,973,460	$ 8,844,552	$ 8,486,907	$ 7,918,879	$ 7,098,090	$ 7,348,704	$ 7,273,100	$ 6,346,741	
Plan Fiduciary Net Position - Ending (b)	$ 10,415,493	$ 11,398,101	$ 8,973,460	$ 8,844,552	$ 8,486,907	$ 7,918,879	$ 7,098,090	$ 7,348,704	$ 7,273,100	
Net Pension Liability - Ending (a) - (b)	$ 4,351,605	$ 771,894	$ 1,318,107	$ 1,064,601	$ 1,065,897	$ 1,350,119	$ 4,013,174	$ 1,136,234	$ 1,080,041	
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	70.53 %	93.66 %	87.19 %	89.26 %	88.84 %	85.43 %	63.88 %	86.61 %	87.07 %	
Covered Employee Payroll	$ 1,127,314	$ 1,096,195	$ 1,069,481	$ 1,011,421	$ 976,657	$ 944,296	$ 881,222	$ 845,076	$ 820,333	
Net Pension Liability as a Percentage of Covered Employee Payroll	386.02 %	70.42 %	123.25 %	105.26 %	109.14 %	142.98 %	455.41 %	134.45 %	131.66 %	

Notes to Schedule:

N/A

Schedules of Required Supplementary Information
Schedule of the Net Pension Liability Multiyear
(Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a % of Covered Payroll
2013						
2014	$ 8,353,141	$ 7,273,100	$ 1,080,041	87.07%	$ 820,333	131.66%
2015	$ 8,484,938	$ 7,348,704	$ 1,136,234	86.61%	$ 845,076	134.45%
2016	$ 11,111,264	$ 7,098,090	$ 4,013,174	63.88%	$ 881,222	455.41%
2017	$ 9,268,998	$ 7,918,879	$ 1,350,119	85.43%	$ 944,296	142.98%
2018	$ 9,552,804	$ 8,486,907	$ 1,065,897	88.84%	$ 976,657	109.14%
2019	$ 9,909,153	$ 8,844,552	$ 1,064,601	89.26%	$ 1,011,421	105.26%
2020	$ 10,291,567	$ 8,973,460	$ 1,318,107	87.19%	$ 1,069,481	123.25%
2021	$ 12,169,995	$ 11,398,101	$ 771,894	93.66%	$ 1,096,195	70.42%
2022	$ 14,767,098	$ 10,415,493	$ 4,351,605	70.53%	$ 1,127,314	386.02%

Schedule of Contributions Multiyear
(Dollars in Thousands)

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2013	$ 189,254	$ 125,995	$ 63,259	$ 796,188	15.82%
2014	$ 163,985	$ 141,632	$ 22,353	$ 820,333	17.27
2015	$ 197,325	$ 153,317	$ 44,008	$ 845,076	18.14
2016	$ 189,375	$ 165,065	$ 24,310	$ 881,222	18.73
2017	$ 165,252	$ 175,329	$ (10,077)	$ 944,296	18.57
2018	$ 193,183	$ 179,781	$ 13,402	$ 976,657	18.41
2019	$ 173,459	$ 188,317	$ (14,858)	$ 1,011,421	18.62
2020	$ 177,855	$ 207,319	$ (29,464)	$ 1,069,481	19.39
2021	$ 174,405	$ 219,129	$ (44,724)	$ 1,096,195	19.99
2022	$ 153,766	$ 224,416	$ (70,650)	$ 1,127,314	19.91

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Contribution Rates for Fiscal Year Ending June 30, 2022:

Valuation Date	June 30, 2021
Notes	Actuarially determined contribution rates are calculated as of each June 30 and apply to the fiscal year beginning on the day after the measurement date.
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	27 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	2.25%
Payroll Growth	3.00%
Salary Increases	3.00% to 11.75% including inflation
Investment Rate of Return	7.50%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2021 valuation pursuant to an experience study of the period 2015 - 2019.
Mortality	Pub-2010 Public Safety Mortality Tables projected with mortality improvement scale MP-2020, from a base year of 2010. Male retiree rates adjusted by a factor of 0.98.

Other Information:

Notes	The plan is assumed to pay a 1.00% post retirement benefit increase for all future years.
	See separate funding report as of June 30, 2021 for additional detail.

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
2013	
2014	18.7 %
2015	4.5
2016	(0.1)
2017	15.2
2018	10.5
2019	7.3
2020	4.2
2021	30.3
2022	(6.4)

[1] *Annual money-weighted rate of return, net of investment expenses.*

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to PERA for GASB-compliance purposes. PERA furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

Rate of Return

For the fiscal year ended June 30, 2022, the annual money-weighted rate of return for the Public Employees Police and Fire Plan was -6.4%. The money-weighted rate of return is a method of calculating period-by-period returns on pension plan investments that adjusts for the changing amounts actually invested. For purposes of this schedule, the money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

Ten-Year Schedule of Money-Weighted Investment Return

Ten-year data is not available. Additional years will be provided when they become available.
To request additional information about the computation of the annual money-weighted rate of return and the investments for the Public Employees Retirement Association of Minnesota (including the investments for PERA's defined benefit retirement funds), contact SBI at 60 Empire Drive, Suite 355, St. Paul, Minnesota, 55103, via email at minn.sbi@state.mn.us or telephone at 651.296.3328.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

Asset Allocation

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Estimates for expected future real rates of return (expected returns, net of inflation) were developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce a geometric, long-term expected rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each major asset class that is included in the pension fund's target asset allocation as of June 30, 2022, these estimates are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (geometric)
Domestic Equity	33.5%	5.10%
International Equity	16.5%	5.30%
Private Markets	25.0%	5.90%
Fixed Income	25.0%	0.75%
Unallocated Cash	0.0%	0.00%
Total	100%	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to PERA for GASB compliance purposes. PERA furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

For purposes of this valuation, the long-term expected rate of return assumption is 6.50%. This assumption is based on reviews of inflation and investment return assumptions in our report dated July 12, 2022.

Single Discount Rate

A single discount rate of 5.40% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 6.50% and the municipal bond rate of 3.69%. The projection of cash flows used to determine this single discount rate assumed that plan member and employer contributions will be made at the current statutory rates. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance the benefit payments through the year ending June 30, 2060. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the year ending June 30, 2060, and the municipal bond rate was applied to all benefit payments after the point of asset depletion.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the plan's net pension liability, calculated using a single discount rate of 5.40%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

	1% Decrease 4.40%	Current Single Discount Rate Assumption 5.40%	1% Increase 6.40%
Total Pension Liability	$ 17,001,089	$ 14,767,098	$ 12,961,050
Net Position Restricted for Pensions	$ 10,415,493	$ 10,415,493	$ 10,415,493
Net Pension Liability	**$ 6,585,596**	**$ 4,351,605**	**$ 2,545,557**

GASB Statement No. 68 Reconciliation (Dollars in Thousands)
Current Reporting Period

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Current Period: Deferred Outflows	Current Period: Deferred Inflows	Current Period: Pension Expense*
Balance Beginning of Year	**$ 12,169,995**	**$ 11,398,101**	**$ 771,894**			
Changes for the Year:						
Service Cost	$ 282,658		$ 282,658			$ 282,658
Interest on Total Pension Liability	$ 779,519		$ 779,519			$ 779,519
Interest on Fiduciary Net Position		$ 731,722	$ (731,722)			$ (731,722)
Changes in Benefit Terms	$ -		$ -			$ -
Liability Experience Gains and Losses	$ 187,572		$ 187,572	$ 156,310	$ -	$ 31,262
Changes in Assumptions	$ 1,984,805		$ 1,984,805	$ 1,654,004	$ -	$ 330,801
Contributions - Employer		$ 224,416	$ (224,416)			
Contributions - Employees		$ 133,023	$ (133,023)			$ (133,023)
Asset Gain/(Loss)		$ (1,432,664)	$ 1,432,664	$ 1,146,131	$ -	$ 286,533
Benefit Payouts	$ (637,451)	$ (637,451)				
Administrative Expenses		$ (1,634)	$ 1,634			$ 1,634
Other		$ (20)	$ 20			$ 20
Net Changes	**$ 2,597,103**	**$ (982,608)**	**$ 3,579,711**	**$ 2,956,445**	**$ -**	**$ 847,682**
Balance End of Year	**$ 14,767,098**	**$ 10,415,493**	**$ 4,351,605**			

** Pension Expense from Experience in the Current Reporting Period.*

GASB Statement No. 68 Reconciliation (Dollars in Thousands)
Current and Prior Reporting Periods

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Net Deferred Outflows Prior Year	Total Pension Expense*
Balance Beginning of Year	**$ 12,169,995**	**$ 11,398,101**	**$ 771,894**				
Changes for the Year:							
Service Cost	$ 282,658		$ 282,658				$ 282,658
Interest on Total Pension Liability	$ 779,519		$ 779,519				$ 779,519
Interest on Fiduciary Net Position		$ 731,722	$ (731,722)				$ (731,722)
Changes in Benefit Terms	$ -		$ -				$ -
Liability Experience Gains and Losses	$ 187,572		$ 187,572	$ 265,789	$ -	$ 148,252	$ 70,035
Changes in Assumptions	$ 1,984,805		$ 1,984,805	$ 2,561,589	$ 26,160	$ 710,375	$ 159,751
Contributions - Employer		$ 224,416	$ (224,416)				
Contributions - Employees		$ 133,023	$ (133,023)				$ (133,023)
Asset Gain/(Loss)		$ (1,432,664)	$ 1,432,664	$ 1,263,801	$ 1,205,473	$ (1,474,892)	$ (100,556)
Benefit Payouts	$ (637,451)	$ (637,451)					
Administrative Expenses		$ (1,634)	$ 1,634				$ 1,634
Other		$ (20)	$ 20				$ 20
Net Changes	**$ 2,597,103**	**$ (982,608)**	**$ 3,579,711**				**$ 328,316**
Balance End of Year	**$ 14,767,098**	**$ 10,415,493**	**$ 4,351,605**	**$ 4,091,179**	**$ 1,231,633**	**$ (616,265)**	

** Pension Expense from Experience in the Current and Prior Reporting Period.*

Summary of Population Statistics

	Actives	Terminated: Deferred Retirement	Terminated: Other Non-Vested	Recipients: Service Retirement	Recipients: Disability Retirement	Recipients: Survivor	Total
Members on July 1, 2021	**11,705**	**1,813**	**912**	**8,021**	**1,684**	**1,951**	**26,086**
New members	822						822
Return to active	63	(28)	(35)	0	0	0	0
Terminated non-vested	(129)	0	129	0	0	0	0
Service retirements	(279)	(137)	0	416	0	0	0
Terminated deferred	(269)	269	0	0	0	0	0
Terminated refund/transfer	(60)	(27)	(83)	0	0	0	(170)
Deaths	(10)	(7)	(3)	(220)	(42)	(119)	(401)
New beneficiary	0	0	0	0	0	127	127
Disabled	(214)	0	0	0	214	0	0
Data adjustments	0	(19)	37	19	56	0	93
Net change	(76)	51	45	215	228	8	471
Members on July 1, 2022	**11,629**	**1,864**	**957**	**8,236**	**1,912**	**1,959**	**26,557**

SECTION E

SUMMARY OF BENEFITS

Summary of Plan Provisions – Police and Fire Plan

Following is a summary of the major plan provisions used in the valuation of this report. PERA is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30.
Eligibility	All full-time and certain part-time police officers and fire fighters, and certain paramedics, who are not contributing to any other local retirement fund.
Contributions	<u>Effective as of</u> / <u>Member</u> / <u>Employer</u> / <u>Total</u> January 1, 2020 and later / 11.80% / 17.70% / 29.50% Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
State contributions	$9 million paid annually on October 1 until both PERA P&F and MSRS State Patrol become 90% funded (on an actuarial value of assets basis), or July 1, 2048, if earlier. In addition, $4.5 million in fiscal years 2019 and 2020, and $9.0 million thereafter, until the plan reaches 100% funding on an actuarial value of assets basis, or July 1, 2048, if earlier.
Allowable service	Police and Fire service during which member contributions were made. May also include certain leaves of absence and military service.
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leaves and sick leave payments, severance payments, Workers' Compensation benefits and employer-paid flexible spending accounts, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.
Average salary	Average of the five highest successive years of salary. Average Salary is based on all Allowable Service if less than five years.

Summary of Plan Provisions – Police and Fire Plan (Continued)

Vesting

Years of Service	Vesting Percent if First Hired: Before 7/1/2010	After 6/30/2010 & before 7/1/2014	After 6/30/2014
<3	0%	0%	0%
3 – 4	100	0	0
5	100	50	0
6	100	60	0
7	100	70	0
8	100	80	0
9	100	90	0
10	100	100	50
11	100	100	55
12	100	100	60
13	100	100	65
14	100	100	70
15	100	100	75
16	100	100	80
17	100	100	85
18	100	100	90
19	100	100	95
20+	100	100	100

Summary of Plan Provisions – Police and Fire Plan (Continued)

Retirement	
<u>Normal retirement benefit</u>	
Age/service requirement	Age 55 and at least partially vested. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.
Amount	3.00% of Average Salary for each year of Allowable Service (up to 33 years if hired after June 30, 2014), pro-rata for completed months, adjusted for partial vesting if applicable. A pro-rata share of member contributions will be refunded at retirement for excess service.
<u>Early retirement</u>	
Age/service requirement	Age 50 and at least partially vested.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date and 0.10% (0.20% for members enrolled in the plan after June 30, 2007) reduction for each month the member is under age 55. If the effective date of retirement is after June 30, 2019, the reduction is 5/12% for each month that the member is under age 55 at the time of retirement.
Form of payment	Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 25%, 50%, 75% or 100% Joint and Survivor with bounce back feature. The Joint and Survivor options are determined on an actuarially equivalent basis, but with no actuarial reduction for the bounce back feature.
Benefit Increases	Benefit recipients receive 1.00% increases each year in January. A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of June 30 will receive a pro rata increase. For retirements after May 31, 2014, the first increase will be delayed two years. Members retired under laws in effect before July 1, 1973 receive an additional lump sum payment each year. In 1989, this lump sum payment is the greater of $25 times each full year of Allowable Service or the difference between $400 times each full year of Allowable Service and the sum of benefits paid from any Minnesota public pension plan plus cash payments from the Social Security Administration for the preceding fiscal year July 1, 1988 through June 30, 1989. In each following year, the lump sum payment will increase by the same percentage increase that is applied to regular annuities paid from the Fund. Effective January 1, 2002, annual lump sum payment is divided by 12 and paid as a monthly life annuity in the annuity form elected.

Summary of Plan Provisions – Police and Fire Plan (Continued)

Disability	
Duty disability benefit	
Age/service requirement	Physically or mentally unable to perform normal duties as a police officer or fire fighter as a direct result of an act of duty specific to protecting property and personal safety of others. Members age 55 or older with 20 or more years of Allowable Service are not eligible to apply for duty disability benefits.
Amount	60.0%, plus an additional 3.00% for each year of service in excess of 20 years, of Average Salary paid until Normal Retirement Age, or for 60 months, whichever is later. The retirement benefit is then recalculated but is never lower than the disability benefit. If a member became disabled prior to July 1, 1997 but did not commence their benefit before July 1, 1997, the benefit is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in post-retirement interest rates from 5.00% to 6.00%.
Regular disability benefit	
Age/service requirement	Physically or mentally unable to perform normal duties as a police officer or fire fighter with one year of Allowable Service. Members age 55 or older with 15 or more years of Allowable Service are not eligible to apply for regular disability benefits.
Amount	45.00% of Average Salary, paid until Normal Retirement Age, or for 60 months, whichever is later. The retirement benefit is then recalculated but is never lower than the disability benefit. Benefits for total and permanent regular disability are calculated as 3.00% of Average Salary for each year of Allowable Service, with a minimum of 45.00% of Average Salary. If a member became disabled prior to July 1, 1997 but did not commence his or her benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.
Retirement benefit	
Age/service requirement	Upon cessation of disability benefits.
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before age 55 or the normal retirement benefit available at age 55, or an actuarially equivalent optional annuity.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.

Summary of Plan Provisions – Police and Fire Plan (Continued)

Death

<u>Surviving spouse benefit</u>

Age/service requirement	Death of active member or regular disabled member with surviving spouse whose disability benefit accrued before July 1, 2007, who is vested at death (service requirement is waived if death occurs in the line of duty).
Amount	50.00% of salary (60.00% if death occurs in the line of duty after June 30, 2007) averaged over last six months. Benefit paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991. If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.

<u>Surviving dependent children's benefit</u>

Age/service requirement	Non-duty related death of active member or regular disabled member with eligible dependent child.
Amount	10.00% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 50.00% of salary and maximum of 70.00% of salary. Benefits paid until child marries, dies, or attains age 18 (age 23 if full-time student).

<u>Duty disability surviving spouse benefit</u>

Age/service requirement	Member who is totally and permanently disabled who dies before age 55 or within five years of the effective date of the disability benefit, whichever is later.
Amount	60.00% of salary averaged over last six months. Benefits paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991.
Benefit increases	Same as for retirement.

Death (Concluded)

Duty disability surviving dependent children's benefit

Age/service requirement	Death of a member with an eligible dependent child who was disabled in the line of duty and died as a direct result of the disability.
Amount	10.00% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 60.00% of salary and maximum of 80.00% of salary. Benefits paid until child marries, dies, or attains age 18 (age 23 if full-time student). If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Surviving spouse optional annuity

Age/service requirement	Active member dies before age 55. Benefits commence when member would have been age 55 or as early as age 50 if qualified for early retirement, benefits commence immediately if member had 30 years of service.
Amount	Survivor's payment of the 100% joint and survivor benefit the member could have elected if terminated. Alternatively, spouse may elect refund of deceased's contributions with interest if there are no dependent children. If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.

Summary of Plan Provisions – Police and Fire Plan (Continued)

Termination	
Refund of contributions	
Age/service requirement	Termination of public service.
Amount	Member's contributions with 6.00% interest through June 30, 2011. Beginning July 1, 2011, a member's contributions increase at 4.00% interest. Beginning July 1, 2018, a member's contributions increase at 3.00% interest. If a member is vested, a deferred annuity may be elected in lieu of a refund.
Deferred benefit	
Age/service requirement	Partially or fully vested.
Amount	Benefit computed under law in effect at termination and increased by the following percentage (augmentation) compounded annually for terminations prior to 2012: (a.) 0.00% before July 1, 1971; (b.) 5.00% from July 1, 1971 to January 1, 1981; (c.) 3.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012; (d.) 5.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of the date the annuity begins and January 1, 2012; (e.) 1.00% from January 1, 2012 through December 31, 2018; and (f.) 0.00% from January 1, 2019, thereafter. Members who terminate after 2011 will receive no future augmentation. If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997 and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Form of payment	Same as for retirement.
Actuarial equivalent factors	Effective July 1, 2019, actuarially equivalent factors based on the RP-2014 mortality table for healthy annuitants for a member turning age 55 in 2021, reflecting projected mortality improvements using Scale MP-2017, male rates multiplied by 0.96, blended 90% males, and 6.50% interest.

Summary of Plan Provisions – Police and Fire Plan (Concluded)

Combined service annuity	Members are eligible for combined service benefits if they: (a.) Meet minimum retirement age for each plan participated in and total public service meets the vesting requirements of each plan; or (b.) Have three or more years of service under PERA and the covered fund(s) (if hired prior to July 1, 2010). Other requirements for combined service include: (a.) Member must have at least six months of allowable service credit in each plan worked under; and (b.) Member may not be in receipt of a benefit from another plan. Members who meet the above requirements must have their benefits based on the following: (a.) Allowable service in all covered plans is combined in order to determine eligibility for early retirement. (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Changes in plan provisions	There have been no changes in plan provisions since the prior valuation.

Summary of Plan Provisions – Minneapolis Police Relief Association

Normal retirement benefit	Monthly benefits are equal to the number of units multiplied by the unit values described herein. Units are based on service, as follows: **Service** / **Units** 20 / 35.0 units 21 / 36.6 units 22 / 38.2 units 23 / 39.8 units 24 / 41.4 units 25 or more / 43.0 units Members must be at least age 50 with 5 years of service to receive this benefit.
Unit values	**Calendar Year** / **Unit Value** 2012 / $ 104.651 2013 / 109.011 2014 / 114.825 2015 / 124.031 Unit values after 2015 are assumed to increase the same percentage as the post-retirement benefit increase.
Surviving spouse's benefit	Annual benefit based on 23 units for the surviving spouse of an active or retired member. Upon retirement, members may choose an alternative form of payment that provides 50%, 75%, or 100% of their benefit to their spouse after their death. The units are adjusted if one of these alternate forms is selected.
Surviving children's benefit	Annual benefit based on 8 units for each surviving child of an active or retired member. Benefits continue to age 18 or if the child is a full-time student, to age 22. The total benefit for surviving children and spouse combined is limited to 41 units.
Contributions	Member and employer contributions equal to 8.00% of the monthly unit value multiplied by 80 are required for each member. After 25 years of service, member contributions are paid to a separate health insurance account. Until July 15, 2018, the employer contributed annually an amount to amortize the unfunded liability by December 31, 2031. Beginning July 15, 2019, the employer will contribute $4,489,837 each July 15 through 2031.
Benefit increases	Benefit recipients receive 1.00% increases each year in January.

Summary of Plan Provisions – Minneapolis Firefighters' Relief Association

Normal retirement benefit	Monthly benefits are equal to the number of units multiplied by the unit values described herein. Units are based on service, as follows:

Service	Units
15	25.0 units
16	26.6 units
17	28.2 units
18	29.8 units
19	31.4 units
20	35.0 units
21	36.6 units
22	38.2 units
23	39.8 units
24	41.4 units
25 or more	43.0 units

Members must be at least age 50 with 5 years of service to receive this benefit.

Members may choose among alternative survivor payment forms which modify the number of units payable to the member and their spouse. A member who is single at the time of retirement and who has at least 25 years of service may choose to receive 43.3 units on the condition of a reduced survivor payment to any future spouse.

Unit values

Calendar Year	Unit Value
2013	$100.775
2014	104.264
2015	124.031

Unit values after 2015 are assumed to increase the same percentage as the post-retirement benefit increase.

Disability benefit	Annual benefit based on 41 units for the disabled member.
Surviving spouse's benefit	Annual benefit based on 23 units for the surviving spouse of an active or retired member and 22 units for the surviving spouse of a disabled member. Upon retirement, members may choose an alternative form of payment that provides 50%, 75% or 100% of their benefit to their spouse after their death. The units are adjusted if one of these alternate forms is selected.
Surviving children's benefit	Annual benefit based on 8 units for each surviving child of an active or retired member. Benefits continue to age 18 or if the child is a full-time student, to age 22. The total benefit for surviving children and spouse combined is limited to 43 units.
Contributions	Member and employer contributions equal to 8.00% of the monthly unit value multiplied by 80 are required for each member. After 25 years of service, member contributions are paid to a separate health insurance account. Until July 15, 2018, the employer contributed annually an amount to amortize the unfunded liability by December 31, 2031. Beginning July 15, 2019, the employer will contribute $3,188,735 each July 15 through 2031.
Benefit increases	Benefit recipients receive 1.00% increases each year in January.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS USED FOR THE DETERMINATION OF TOTAL PENSION LIABILITY AND RELATED VALUES

Actuarial Methods Used for the Determination of Total Pension Liability and Related Values

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan. The assumptions are based on the last experience study dated July 14, 2020, and a review of inflation and investment assumptions dated July 12, 2022. PERA staff selected the long term expected rate of return on assets of 6.50% based on input from GRS that the proposed selection would be reasonable for the purpose of the measurement.

The Allowance for Combined Service Annuity assumptions are based on an analysis completed by the LCPR actuary and documented in a report dated October 2016.

Investment return	6.50% per annum.
Single Discount Rate	5.40% per annum.
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year.
Inflation	2.25% per year.
Payroll growth	3.00% per year.
Mortality rates	
Healthy pre-retirement	Pub-2010 Public Safety Employee Mortality Table adjusted for mortality improvements using projection scale MP-2021.
Healthy post-retirement	Pub-2010 Healthy Retired Public Safety Mortality Table adjusted for mortality improvements using projection scale MP-2021. Male rates are multiplied by a factor of 0.98.
Disabled	Pub-2010 Public Safety Disabled Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2021. Male rates are multiplied by a factor of 1.05.
Notes	The Pub-2010 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rates for ages 50 to 120. We have extended the annuitant mortality table as needed for members and beneficiaries younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the rate table. Members who have attained the highest assumed retirement age are assumed to retire in one year. Note that plan changes reflected in this report may ultimately result in behavior changes that are not anticipated in the current retirement rates.
Withdrawal	Service-related rates based on actual experience; see table of sample rates

Summary of Actuarial Assumptions (Continued)

Disability	Age-related rates based on experience; see table of sample rates. All incidences are assumed to be duty-related.
Allowance for combined service annuity	Liabilities for former members are increased by 33.0% for vested members and 2.0% for non-vested members to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	In the valuation year, equal to prior year administrative expenses expressed as percentage of prior year projected payroll. In each subsequent year, equal to the initial administrative expense percentage applied to payroll for the closed group.
Refund of contributions	For non-vested members, account balances accumulate interest until the assumed commencement date and are discounted back to the valuation date. Active members decrementing after becoming eligible for a benefit are assumed to take the contributions accumulated with interest if larger than the value of the benefit.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 55.
Percentage married	85% of male and 70% of female active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Males are assumed to be two years older than females. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 7.5% elect 25% Joint & Survivor option 15.0% elect 50% Joint & Survivor option 12.5% elect 75% Joint & Survivor option 55.0% elect 100% Joint & Survivor option Females: 15.0% elect 25% Joint & Survivor option 30.0% elect 50% Joint & Survivor option 5.0% elect 75% Joint & Survivor option 20.0% elect 100% Joint & Survivor option Remaining married members and unmarried members are assumed to elect the Straight Life option. Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrements are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.
Benefit service	Exact fractional service is used to determine the amount of benefit payable.

Summary of Actuarial Assumptions (Continued)

Pay Increases	Pay increases are assumed to happen at the beginning of the fiscal year. This is equivalent to assuming that reported earnings are pensionable earnings for the year ending on the valuation date.
Final average salary	For present value of future benefit purposes, final average salary was calculated in accordance with pay increase assumptions, but was not permitted to fall below the final average salary reported in the data.
Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided. In cases where submitted data was missing or incomplete, the following assumptions, based on average results for applicable members at the time of the last experience study, were applied: <u>Data for active members:</u> There were 33 members reported with a salary less than $100 after annualization. We used prior year salary (22 members), if available; otherwise high five salary with a 10% load to account for salary increases (9 members). If neither prior year salary nor high five salary was available, we assumed a value of $60,000. There were also 209 members reported without a gender. We assumed male gender. There were 2 members reported without a date of birth. We assumed these members were hired at age 30. <u>Data for terminated members:</u> We calculated benefits for these members using the reported Average Salary and credited service. If Average Salary was not reported (no members), we assumed a value of $24,000. If credited service was not reported (15 members), we used elapsed time from hire date to termination date (15 members); if elapsed time was not available, we assumed nine years of service. If termination date was invalid or not reported (8 members), we assumed the termination date was equal to the hire date plus credited service, otherwise the valuation date. If the reported termination date occurs prior to the reported hire date, the two dates were swapped. There were 11 members reported without a gender; male was assumed. There were no members reported without a date of birth. <u>Data for retired members:</u> There was 1 member with missing or invalid dates of birth or benefit amounts. There were 14 members reported without a gender. We assumed retirees are male and beneficiaries are female.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members (Concluded)	Data for retired members (Concluded): Because PERA reclassifies disabled members as retirees once the member reaches Normal Retirement Age, we compare the members that PERA reports as retirees to our disabled group from the last valuation. If a member was disabled in the prior valuation, we reclassify that member as a disabled retiree in this year's valuation. We reclassified 268 retirees as disabled retirees in this valuation.
Changes in actuarial assumptions since the prior valuation	The mortality improvement scale was changed from MP-2020 to MP-2021. The single discount rate changed from 6.5% to 5.4%.

Summary of Actuarial Assumptions (Continued)

	Percentage of Members Dying Each Year*					
	Healthy Post-Retirement Mortality		Healthy Pre-Retirement Mortality		Disability Mortality	
Age in 2022	Males	Females	Males	Females	Males	Females
20	0.04%	0.02%	0.04%	0.02%	0.13%	0.06%
25	0.04	0.02	0.04	0.02	0.13	0.08
30	0.06	0.04	0.06	0.04	0.18	0.12
35	0.07	0.05	0.07	0.05	0.22	0.17
40	0.08	0.06	0.08	0.06	0.24	0.19
45	0.13	0.08	0.09	0.07	0.27	0.22
50	0.18	0.14	0.11	0.08	0.35	0.28
55	0.29	0.26	0.17	0.12	0.48	0.46
60	0.51	0.46	0.27	0.18	0.80	0.73
65	0.87	0.74	0.41	0.22	1.26	1.01
70	1.42	1.17	0.71	0.40	1.86	1.41
75	2.46	2.02	1.27	0.80	3.03	2.16
80	4.49	3.63	2.40	1.65	5.28	3.63
85	8.23	6.46	7.52	5.66	8.90	6.46
90	14.58	11.29	14.87	11.29	15.62	11.29

* *Generally, mortality rates are expected to increase as age increases. These standard mortality rates have been adjusted slightly to prevent decreasing mortality rates. The adjustment has no material effect on results.*

	Rates of Disability Retirement	
Age	Males	Females
20	0.11%	0.11%
25	0.14	0.14
30	0.21	0.21
35	0.34	0.34
40	0.54	0.54
45	0.62	0.62
50	0.95	0.95
55	1.30	1.30
60	1.30	1.30

Summary of Actuarial Assumptions (Concluded)

Age	Rates of Service Retirement
50	7.50%
51	5.00
52	5.00
53	7.50
54	10.00
55	30.00
56	20.00
57	22.50
58	25.00
59	25.00
60	20.00
61	25.00
62	30.00
63	27.50
64	27.50
65	50.00
66	40.00
67	50.00
68	50.00
69	50.00
70+	100.00

Year	Withdrawal Rates
1	6.00%
2	4.00
3	2.75
4	2.50
5	2.50
6	2.25
7	2.25
8	2.00
9	2.00
10	2.00
11	1.75
12	1.50
13	1.50
14	1.50
15	1.50
16	1.50
17	1.50
18	1.25
19	1.25
20	1.25
21+	1.00

Salary Scale	
Year	Increase
1	11.75%
2	9.25%
3	8.00%
4	7.00%
5	5.50%
6	4.80%
7	4.60%
8	4.30%
9	4.10%
10	4.00%
11	3.90%
12	3.80%
13	3.70%
14	3.60%
15	3.50%
16	3.50%
17	3.50%
18	3.50%
19	3.40%
20	3.40%
21	3.40%
22	3.30%
23	3.15%
24	3.00%
25+	3.00%

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed long-term rate of return is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.50%, the municipal bond rate is 3.69%; and **the resulting single discount rate is 5.40%**.

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate. It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

Single Discount Rate Development
Projection of Contributions
(Dollars in Thousands)

	Payroll			Projected Contributions					
Fiscal Year Ending	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL*	Contributions due from Mergers	Additional State Contributions**	Total Contributions
2022	$ 1,127,314	$ 0	$ 1,127,314						
2023	1,103,230	12,522	1,115,752	$ 130,181	$ 195,272	$ 446	$ 7,679	$ 18,000	$ 351,578
2024	1,090,276	58,949	1,149,225	128,653	192,979	2,098	7,679	18,000	349,409
2025	1,072,965	110,737	1,183,702	126,610	189,915	3,942	7,679	18,000	346,146
2026	1,051,709	167,504	1,219,213	124,102	186,153	5,962	7,679	18,000	341,896
2027	1,027,201	228,588	1,255,789	121,210	181,815	8,137	7,679	18,000	336,841
2028	1,000,895	292,568	1,293,463	118,106	177,158	10,415	7,679	18,000	331,358
2029	974,063	358,204	1,332,267	114,939	172,409	12,753	7,679	18,000	325,780
2030	946,050	426,185	1,372,235	111,634	167,451	15,172	7,679	9,000	310,936
2031	916,433	496,969	1,413,402	108,139	162,209	17,692	7,679	9,000	304,719
2032	885,801	570,003	1,455,804	104,525	156,787	20,292	7,679	9,000	298,283
2033	853,982	645,496	1,499,478	100,770	151,155	22,979	0	9,000	283,904
2034	821,091	723,371	1,544,462	96,889	145,333	25,752	0	9,000	276,974
2035	787,059	803,737	1,590,796	92,873	139,309	28,613	0	9,000	269,795
2036	751,933	886,587	1,638,520	88,728	133,092	31,563	0	9,000	262,383
2037	715,489	972,187	1,687,676	84,428	126,641	34,610	0	9,000	254,679
2038	677,831	1,060,475	1,738,306	79,984	119,976	37,753	0	9,000	246,713
2039	639,400	1,151,055	1,790,455	75,449	113,174	40,978	0	9,000	238,601
2040	600,214	1,243,955	1,844,169	70,825	106,238	44,285	0	9,000	230,348
2041	560,663	1,338,831	1,899,494	66,158	99,237	47,663	0	9,000	222,058
2042	520,904	1,435,575	1,956,479	61,467	92,200	51,106	0	9,000	213,773
2043	480,952	1,534,221	2,015,173	56,752	85,129	54,618	0	9,000	205,499
2044	441,029	1,634,599	2,075,628	52,041	78,062	58,192	0	9,000	197,295
2045	401,109	1,736,788	2,137,897	47,331	70,996	61,830	0	9,000	189,157
2046	361,150	1,840,884	2,202,034	42,616	63,924	65,535	0	9,000	181,075
2047	321,139	1,946,956	2,268,095	37,894	56,842	69,312	0	9,000	173,048
2048	281,609	2,054,529	2,336,138	33,230	49,845	73,141	0	9,000	165,216
2049	243,696	2,162,526	2,406,222	28,756	43,134	76,986	0	0	148,876
2050	207,965	2,270,444	2,478,409	24,540	36,810	80,827	0	0	142,177
2051	174,520	2,378,241	2,552,761	20,593	30,890	84,666	0	0	136,149
2052	143,628	2,485,716	2,629,344	16,948	25,422	88,492	0	0	130,862
2053	115,784	2,592,440	2,708,224	13,663	20,494	92,290	0	0	126,447
2054	91,508	2,697,963	2,789,471	10,798	16,197	96,047	0	0	123,042
2055	71,033	2,802,122	2,873,155	8,382	12,573	99,755	0	0	120,710
2056	54,285	2,905,065	2,959,350	6,406	9,609	103,419	0	0	119,434
2057	40,929	3,007,201	3,048,130	4,830	7,244	107,056	0	0	119,130
2058	30,465	3,109,109	3,139,574	3,595	5,392	110,684	0	0	119,671
2059	22,288	3,211,473	3,233,761	2,630	3,945	114,328	0	0	120,903
2060	15,979	3,314,795	3,330,774	1,885	2,828	118,007	0	0	122,720
2061	11,167	3,419,530	3,430,697	1,318	1,977	121,735	0	0	125,030
2062	7,546	3,526,072	3,533,618	890	1,336	125,528	0	0	127,754
2063	4,878	3,634,749	3,639,627	576	863	129,397	0	0	130,836
2064	3,006	3,745,810	3,748,816	355	532	133,351	0	0	134,238
2065	1,757	3,859,523	3,861,280	207	311	137,399	0	0	137,917
2066	962	3,976,156	3,977,118	114	170	141,551	0	0	141,835
2067	489	4,095,943	4,096,432	58	87	145,815	0	0	145,960
2068	230	4,219,095	4,219,325	27	41	150,200	0	0	150,268
2069	96	4,345,809	4,345,905	11	17	154,711	0	0	154,739
2070	35	4,476,247	4,476,282	4	6	159,355	0	0	159,365
2071	10	4,610,560	4,610,570	1	2	164,136	0	0	164,139
2072	2	4,748,885	4,748,887	0	-	169,061	0	0	169,061

* *Equal to contributions (29.50% of payroll for new employees) net of normal cost and expenses (25.94% of payroll).*

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Single Discount Rate Development
Projection of Contributions (Concluded)
(Dollars in Thousands)

	Payroll			Projected Contributions					
Fiscal Year Ending	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL*	Contributions due from Mergers	Additional State Contributions**	Total Contributions
2073	$ 0	$ 4,891,354	$ 4,891,354	$ 0	$ 0	$ 174,132	$ 0	$ 0	$ 174,132
2074	0	5,038,095	5,038,095	0	0	179,356	0	0	179,356
2075	0	5,189,238	5,189,238	0	0	184,737	0	0	184,737
2076	0	5,344,915	5,344,915	0	0	190,279	0	0	190,279
2077	0	5,505,262	5,505,262	0	0	195,987	0	0	195,987
2078	0	5,670,420	5,670,420	0	0	201,867	0	0	201,867
2079	0	5,840,533	5,840,533	0	0	207,923	0	0	207,923
2080	0	6,015,749	6,015,749	0	0	214,161	0	0	214,161
2081	0	6,196,221	6,196,221	0	0	220,585	0	0	220,585
2082	0	6,382,108	6,382,108	0	0	227,203	0	0	227,203
2083	0	6,573,571	6,573,571	0	0	234,019	0	0	234,019
2084	0	6,770,778	6,770,778	0	0	241,040	0	0	241,040
2085	0	6,973,901	6,973,901	0	0	248,271	0	0	248,271
2086	0	7,183,118	7,183,118	0	0	255,719	0	0	255,719
2087	0	7,398,612	7,398,612	0	0	263,391	0	0	263,391
2088	0	7,620,570	7,620,570	0	0	271,292	0	0	271,292
2089	0	7,849,187	7,849,187	0	0	279,431	0	0	279,431
2090	0	8,084,663	8,084,663	0	0	287,814	0	0	287,814
2091	0	8,327,203	8,327,203	0	0	296,448	0	0	296,448
2092	0	8,577,019	8,577,019	0	0	305,342	0	0	305,342
2093	0	8,834,330	8,834,330	0	0	314,502	0	0	314,502
2094	0	9,099,359	9,099,359	0	0	323,937	0	0	323,937
2095	0	9,372,340	9,372,340	0	0	333,655	0	0	333,655
2096	0	9,653,510	9,653,510	0	0	343,665	0	0	343,665
2097	0	9,943,116	9,943,116	0	0	353,975	0	0	353,975
2098	0	10,241,409	10,241,409	0	0	364,594	0	0	364,594
2099	0	10,548,651	10,548,651	0	0	375,532	0	0	375,532
2100	0	10,865,111	10,865,111	0	0	386,798	0	0	386,798
2101	0	11,191,064	11,191,064	0	0	398,402	0	0	398,402
2102	0	11,526,796	11,526,796	0	0	410,354	0	0	410,354
2103	0	11,872,600	11,872,600	0	0	422,665	0	0	422,665
2104	0	12,228,778	12,228,778	0	0	435,345	0	0	435,345
2105	0	12,595,642	12,595,642	0	0	448,405	0	0	448,405
2106	0	12,973,511	12,973,511	0	0	461,857	0	0	461,857
2107	0	13,362,716	13,362,716	0	0	475,713	0	0	475,713
2108	0	13,763,598	13,763,598	0	0	489,984	0	0	489,984
2109	0	14,176,506	14,176,506	0	0	504,684	0	0	504,684
2110	0	14,601,801	14,601,801	0	0	519,824	0	0	519,824
2111	0	15,039,855	15,039,855	0	0	535,419	0	0	535,419
2112	0	15,491,050	15,491,050	0	0	551,481	0	0	551,481
2113	0	15,955,782	15,955,782	0	0	568,026	0	0	568,026
2114	0	16,434,455	16,434,455	0	0	585,067	0	0	585,067
2115	0	16,927,489	16,927,489	0	0	602,619	0	0	602,619
2116	0	17,435,314	17,435,314	0	0	620,697	0	0	620,697
2117	0	17,958,373	17,958,373	0	0	639,318	0	0	639,318
2118	0	18,497,124	18,497,124	0	0	658,498	0	0	658,498
2119	0	19,052,038	19,052,038	0	0	678,253	0	0	678,253
2120	0	19,623,599	19,623,599	0	0	698,600	0	0	698,600
2121	0	20,212,307	20,212,307	0	0	719,558	0	0	719,558
2122	0	20,818,676	20,818,676	0	0	741,145	0	0	741,145

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Single Discount Rate Development
Projection of Plan Fiduciary Net Position
(Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 6.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2023	$ 10,415,493	$ 351,578	$ 670,167	$ 1,655	$ 666,763	$ 10,762,012
2024	10,762,012	349,409	695,139	1,635	688,419	11,103,066
2025	11,103,066	346,146	721,476	1,609	709,642	11,435,769
2026	11,435,769	341,896	749,436	1,578	730,238	11,756,889
2027	11,756,889	336,841	778,355	1,541	750,025	12,063,859
2028	12,063,859	331,358	808,045	1,501	768,854	12,354,525
2029	12,354,525	325,780	836,287	1,461	786,667	12,629,224
2030	12,629,224	310,936	865,197	1,419	803,124	12,876,668
2031	12,876,668	304,719	894,334	1,375	818,079	13,103,757
2032	13,103,757	298,283	923,301	1,329	831,708	13,309,118
2033	13,309,118	283,904	953,185	1,281	843,643	13,482,199
2034	13,482,199	276,974	983,466	1,232	853,704	13,628,179
2035	13,628,179	269,795	1,013,857	1,181	861,993	13,744,929
2036	13,744,929	262,383	1,044,612	1,128	868,362	13,829,934
2037	13,829,934	254,679	1,076,252	1,073	872,631	13,879,919
2038	13,879,919	246,713	1,107,618	1,017	874,623	13,892,620
2039	13,892,620	238,601	1,139,108	959	874,184	13,865,338
2040	13,865,338	230,348	1,170,823	900	871,134	13,795,097
2041	13,795,097	222,058	1,201,810	841	865,314	13,679,818
2042	13,679,818	213,773	1,231,937	781	856,594	13,517,467
2043	13,517,467	205,499	1,261,369	721	844,837	13,305,713
2044	13,305,713	197,295	1,289,640	662	829,908	13,042,614
2045	13,042,614	189,157	1,317,500	602	811,657	12,725,326
2046	12,725,326	181,075	1,344,827	542	789,902	12,350,934
2047	12,350,934	173,048	1,371,742	482	764,451	11,916,209
2048	11,916,209	165,216	1,397,763	422	735,113	11,418,353
2049	11,418,353	148,876	1,421,630	366	701,468	10,846,701
2050	10,846,701	142,177	1,442,763	312	663,422	10,209,225
2051	10,209,225	136,149	1,461,217	262	621,204	9,505,099
2052	9,505,099	130,862	1,476,588	215	574,777	8,733,935
2053	8,733,935	126,447	1,488,099	174	524,143	7,896,252
2054	7,896,252	123,042	1,494,900	137	469,368	6,993,625
2055	6,993,625	120,710	1,496,536	107	410,572	6,028,264
2056	6,028,264	119,434	1,493,024	81	347,896	5,002,489
2057	5,002,489	119,130	1,484,644	61	281,479	3,918,393
2058	3,918,393	119,671	1,471,893	46	211,439	2,777,564
2059	2,777,564	120,903	1,455,426	33	137,851	1,580,859
2060	1,580,859	122,720	1,435,610	24	60,758	328,703
2061	328,703	125,030	1,412,779	17	-	-
2062	-	127,754	1,387,227	11	-	-
2063	-	130,836	1,359,201	7	-	-
2064	-	134,238	1,328,900	5	-	-
2065	-	137,917	1,296,557	3	-	-
2066	-	141,835	1,262,415	1	-	-
2067	-	145,960	1,226,691	1	-	-
2068	-	150,268	1,189,579	0	-	-
2069	-	154,739	1,151,251	0	-	-
2070	-	159,365	1,111,839	0	-	-
2071	-	164,139	1,071,453	0	-	-
2072	-	169,061	1,030,181	0	-	-

Single Discount Rate Development
Projection of Plan Fiduciary Net Position (Concluded)
(Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 6.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2073	$ -	$ 174,132	$ 988,099	$ 0	$ -	$ -
2074	-	179,356	945,280	0	-	-
2075	-	184,737	901,799	0	-	-
2076	-	190,279	857,737	0	-	-
2077	-	195,987	813,184	0	-	-
2078	-	201,867	768,245	0	-	-
2079	-	207,923	723,040	0	-	-
2080	-	214,161	677,699	0	-	-
2081	-	220,585	632,369	0	-	-
2082	-	227,203	587,211	0	-	-
2083	-	234,019	542,402	0	-	-
2084	-	241,040	498,138	0	-	-
2085	-	248,271	454,629	0	-	-
2086	-	255,719	412,105	0	-	-
2087	-	263,391	370,804	0	-	-
2088	-	271,292	330,976	0	-	-
2089	-	279,431	292,870	0	-	-
2090	-	287,814	256,733	0	-	-
2091	-	296,448	222,794	0	-	-
2092	-	305,342	191,254	0	-	-
2093	-	314,502	162,284	0	-	-
2094	-	323,937	136,004	0	-	-
2095	-	333,655	112,484	0	-	-
2096	-	343,665	91,735	0	-	-
2097	-	353,975	73,706	0	-	-
2098	-	364,594	58,291	0	-	-
2099	-	375,532	45,334	0	-	-
2100	-	386,798	34,639	0	-	-
2101	-	398,402	25,978	0	-	-
2102	-	410,354	19,107	0	-	-
2103	-	422,665	13,771	0	-	-
2104	-	435,345	9,719	0	-	-
2105	-	448,405	6,714	0	-	-
2106	-	461,857	4,539	0	-	-
2107	-	475,713	3,003	0	-	-
2108	-	489,984	1,946	0	-	-
2109	-	504,684	1,236	0	-	-
2110	-	519,824	772	0	-	-
2111	-	535,419	476	0	-	-
2112	-	551,481	291	0	-	-
2113	-	568,026	178	0	-	-
2114	-	585,067	110	0	-	-
2115	-	602,619	69	0	-	-
2116	-	620,697	44	0	-	-
2117	-	639,318	29	0	-	-
2118	-	658,498	20	0	-	-
2119	-	678,253	13	0	-	-
2120	-	698,600	9	0	-	-
2121	-	719,558	6	0	-	-
2122	-	741,145	11	0	-	-

.

Single Discount Rate Development
Present Values of Projected Benefits
(Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
2023	$ 10,415,493	$ 670,167	$ 670,167	$ 0	$ 649,394	$ 0	$ 652,762
2024	10,762,012	695,139	695,139	0	632,481	0	642,373
2025	11,103,066	721,476	721,476	0	616,379	0	632,530
2026	11,435,768	749,436	749,436	0	601,189	0	623,358
2027	11,756,888	778,355	778,355	0	586,279	0	614,220
2028	12,063,858	808,045	808,045	0	571,495	0	604,958
2029	12,354,525	836,287	836,287	0	555,371	0	594,003
2030	12,629,224	865,197	865,197	0	539,502	0	583,031
2031	12,876,668	894,334	894,334	0	523,634	0	571,768
2032	13,103,757	923,301	923,301	0	507,601	0	560,025
2033	13,309,119	953,185	953,185	0	492,047	0	548,511
2034	13,482,199	983,466	983,466	0	476,693	0	536,921
2035	13,628,179	1,013,857	1,013,857	0	461,431	0	525,136
2036	13,744,929	1,044,612	1,044,612	0	446,411	0	513,326
2037	13,829,934	1,076,252	1,076,252	0	431,862	0	501,760
2038	13,879,919	1,107,618	1,107,618	0	417,322	0	489,909
2039	13,892,621	1,139,108	1,139,108	0	402,992	0	478,007
2040	13,865,338	1,170,823	1,170,823	0	388,932	0	466,127
2041	13,795,097	1,201,810	1,201,810	0	374,859	0	453,933
2042	13,679,817	1,231,937	1,231,937	0	360,804	0	441,457
2043	13,517,466	1,261,369	1,261,369	0	346,877	0	428,830
2044	13,305,711	1,289,640	1,289,640	0	333,006	0	415,964
2045	13,042,612	1,317,500	1,317,500	0	319,436	0	403,163
2046	12,725,324	1,344,827	1,344,827	0	306,161	0	390,428
2047	12,350,933	1,371,742	1,371,742	0	293,229	0	377,825
2048	11,916,208	1,397,763	1,397,763	0	280,555	0	365,254
2049	11,418,351	1,421,630	1,421,630	0	267,930	0	352,445
2050	10,846,700	1,442,763	1,442,763	0	255,318	0	339,347
2051	10,209,224	1,461,217	1,461,217	0	242,801	0	326,067
2052	9,505,099	1,476,588	1,476,588	0	230,381	0	312,604
2053	8,733,934	1,488,099	1,488,099	0	218,006	0	298,890
2054	7,896,251	1,494,900	1,494,900	0	205,636	0	284,862
2055	6,993,625	1,496,536	1,496,536	0	193,297	0	270,554
2056	6,028,264	1,493,024	1,493,024	0	181,073	0	256,081
2057	5,002,489	1,484,644	1,484,644	0	169,068	0	241,588
2058	3,918,393	1,471,893	1,471,893	0	157,386	0	227,234
2059	2,777,564	1,455,426	1,455,426	0	146,127	0	213,172
2060	1,580,860	1,435,610	1,435,610	0	135,340	0	199,490
2061	328,705	1,412,779	328,705	1,084,073	29,097	268,651	186,252
2062	-	1,387,227	-	1,387,227	-	331,544	173,508
2063	-	1,359,201	-	1,359,201	-	313,286	161,287
2064	-	1,328,900	-	1,328,900	-	295,401	149,607
2065	-	1,296,557	-	1,296,557	-	277,955	138,482
2066	-	1,262,415	-	1,262,415	-	261,005	127,923
2067	-	1,226,691	-	1,226,691	-	244,593	117,930
2068	-	1,189,579	-	1,189,579	-	228,752	108,499
2069	-	1,151,251	-	1,151,251	-	213,504	99,620
2070	-	1,111,839	-	1,111,839	-	198,857	91,277
2071	-	1,071,453	-	1,071,453	-	184,814	83,452
2072	-	1,030,181	-	1,030,181	-	171,371	76,124

Single Discount Rate Development
Present Values of Projected Benefits (Concluded)
(Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
2073	$ -	$ 988,099	$ -	$ 988,099	$ 0	$ 158,521	$ 69,271
2074	-	945,280	-	945,280	0	146,255	62,872
2075	-	901,799	-	901,799	0	134,563	56,905
2076	-	857,737	-	857,737	0	123,433	51,349
2077	-	813,184	-	813,184	0	112,857	46,186
2078	-	768,245	-	768,245	0	102,826	41,397
2079	-	723,040	-	723,040	0	93,332	36,964
2080	-	677,699	-	677,699	0	84,366	32,869
2081	-	632,369	-	632,369	0	75,921	29,098
2082	-	587,211	-	587,211	0	67,991	25,635
2083	-	542,402	-	542,402	0	60,568	22,465
2084	-	498,138	-	498,138	0	53,645	19,574
2085	-	454,629	-	454,629	0	47,217	16,949
2086	-	412,105	-	412,105	0	41,278	14,576
2087	-	370,804	-	370,804	0	35,819	12,442
2088	-	330,976	-	330,976	0	30,834	10,537
2089	-	292,870	-	292,870	0	26,313	8,846
2090	-	256,733	-	256,733	0	22,246	7,357
2091	-	222,794	-	222,794	0	18,618	6,057
2092	-	191,254	-	191,254	0	15,413	4,933
2093	-	162,284	-	162,284	0	12,613	3,971
2094	-	136,004	-	136,004	0	10,194	3,157
2095	-	112,484	-	112,484	0	8,131	2,477
2096	-	91,735	-	91,735	0	6,395	1,917
2097	-	73,706	-	73,706	0	4,956	1,461
2098	-	58,291	-	58,291	0	3,780	1,096
2099	-	45,334	-	45,334	0	2,835	809
2100	-	34,639	-	34,639	0	2,089	586
2101	-	25,978	-	25,978	0	1,511	417
2102	-	19,107	-	19,107	0	1,072	291
2103	-	13,771	-	13,771	0	745	199
2104	-	9,719	-	9,719	0	507	133
2105	-	6,714	-	6,714	0	338	87
2106	-	4,539	-	4,539	0	220	56
2107	-	3,003	-	3,003	0	141	35
2108	-	1,946	-	1,946	0	88	22
2109	-	1,236	-	1,236	0	54	13
2110	-	772	-	772	0	32	8
2111	-	476	-	476	0	19	5
2112	-	291	-	291	0	11	3
2113	-	178	-	178	0	7	2
2114	-	110	-	110	0	4	1
2115	-	69	-	69	0	2	1
2116	-	44	-	44	0	1	0
2117	-	29	-	29	0	1	0
2118	-	20	-	20	0	1	0
2119	-	13	-	13	0	0	0
2120	-	9	-	9	0	0	0
2121	-	6	-	6	0	0	0
2122	-	11	-	11	0	0	0
				Totals	$ 14,347,483	$ 4,497,498	$ 18,844,981

SECTION H

GLOSSARY OF TERMS

Glossary of Terms

Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future benefit payments at predetermined rates of interest to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically, the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year).
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay (meets the statutory salary definition) and does not include pay above any pay cap.
Deferred Inflows and Outflows of Resources	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
Discount Rate or Single Discount Rate	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: 1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and 2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.
Entry Age Actuarial Cost Method or Entry Age Normal (EAN)	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit age(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

Glossary of Terms

GASB	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
Fiduciary Net Position	The fiduciary net position is the value of the net assets of the trust restricted for pension benefits.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contribution Entities	Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. 68 plan members are not considered non-employer contribution entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

Glossary of Terms

Total Pension Expense The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Changes in Benefit Terms
4. Employee Contributions
5. Projected Earnings on Plan Investments
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to the difference between expected and actual in measurement of the Total Pension Liability
9. Recognition of Outflows (Inflow) of Resources due to Assumption Changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on pension plan investments

Total Pension Liability (TPL) The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL) The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets The valuation assets are the plan fiduciary net position used in determining the net position liability of the plan. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.

Public Employees Retirement Association of Minnesota

Local Government Correctional Service Retirement Plan
GASB Statements No. 67 and No. 68
Accounting and Financial Reporting for Pensions
June 30, 2022

| P: 800.521.0498 | www.grsconsulting.com

November 8, 2022

Public Employees Retirement Association of Minnesota
Local Government Correctional Service Retirement Plan
St. Paul, Minnesota

Dear Trustees of the Local Government Correctional Service Retirement Plan:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the Local Government Correctional Service Retirement Plan, as amended by GASB Statement No. 82. These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust. GASB Statement No. 82 is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The Net Pension Liability is not an appropriate measure for measuring the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligations. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. The calculation of the plan's liability for this report may not be applicable for purposes of funding the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statements No. 67 and No. 68 may produce significantly different results. The information in this report is calculated on a total plan basis. PERA is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the Public Employees Retirement Association (PERA) only in its entirety and only with the permission of PERA. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by PERA, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not audited.

This report complements the actuarial valuation report for funding purposes that was or will be provided to the Plan and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2022 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the Local Government Correctional Service Retirement Plan as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

This report reflects the impact of COVID-19 through June 30, 2022. It does not reflect the ongoing impact of COVID-19, which is likely to influence demographic and investment experience, at least in the short term. We will continue to monitor these developments and their impact on the plan.

This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

Brian B. Murphy, Bonita J. Wurst and Sheryl L. Christensen are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

Brian B. Murphy, FSA, EA, FCA, MAAA, PhD

Bonita J. Wurst, ASA, EA, FCA, MAAA

Sheryl L. Christensen, FSA, EA, FCA, MAAA

Table of Contents

SECTION A

EXECUTIVE SUMMARY

Executive Summary
as of June 30, 2022 (Dollars in Thousands)

		2022
Actuarial Valuation Date		June 30, 2022
Measurement Date of the Net Pension Liability		June 30, 2022
Employer's Fiscal Year Ending Date (Reporting Date)		Varies by Employer
Membership		
Number of		
- Service Retirements		1,407
- Survivors		87
- Disability Retirements		223
- Deferred Retirements		4,129
- Terminated Other Non-Vested		2,480
- Active Members		3,564
- Total		11,890
Covered Payroll	$	220,292
Net Pension Liability		
Total Pension Liability	$	1,307,715
Plan Fiduciary Net Position		975,315
Net Pension Liability	$	332,400
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		74.58%
Net Pension Liability as a Percentage of Covered Payroll		150.89%
Development of the Single Discount Rate		
Single Discount Rate		5.42%
Long-Term Expected Rate of Investment Return		6.50%
Long-Term Municipal Bond Rate*		3.69%
Last year ending June 30 in the 2023 to 2122 projection period for which projected benefit payments are fully funded		2061
Total Pension Expense/(Income)	**$**	**115,083**

Deferred Outflows and Inflows by Source Arising from Current and Prior Periods to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	$ -	$ 10,958
Changes in assumptions	$ 215,272	$ 495
Net difference between projected and actual earnings on pension plan investments	$ 116,740	$ 107,552
Total	$ 332,012	$ 119,005

* *Source:* *Based on the 20-Year Municipal GO Index of mixed maturity general obligation municipal bonds as of the weekly rate closest to but not later than the Measurement Date.*

Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans* establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions* establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements. Governmental Accounting Standards Board (GASB) Statement No. 82, *Pension Issues*, is an amendment to GASB Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state and local governmental employers to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to the Local Government Correctional Service Retirement Plan subsequent to the measurement date of June 30, 2022.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position in accordance with GASB Statement No. 67. The *Statement of Fiduciary Net Position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *Statement of Changes in Fiduciary Net Position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes to the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

Both GASB Statements No. 67 and No. 68 require the notes to the financial statements for the employers and pension plans to include certain descriptive information about the pension plans through which the pension benefits are provided. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The classes of employees and number of members covered by the pension plan;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- The pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- The net pension liability using a discount rate that is 1% higher and 1% lower than the current discount rate used to calculate the total pension liability and net pension liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- The composition of the pension plan's Board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability;
- Information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- Comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. For employer reporting, the net pension liability and pension expense should be measured as of a date (measurement date) no earlier than the end of the employer's prior fiscal year, consistently applied from period to period. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2022 and a measurement date of June 30, 2022.

Measurement of the Net Pension Liability

The net pension liability is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if there are no changes in benefits, Chapter 356 required contributions are made, and all actuarial assumptions are met (including the assumption of the plan earning 7.50% on an actuarial value of assets basis, as prescribed by statutes), then the following outcomes are expected:

(1) The normal cost of the plan is expected to remain approximately level as a percent of pay; and
(2) The plan is expected to remain fully funded.

The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the market value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

(1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations; in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.
(2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
(3) The measurement would produce a different result if the actuarial value of assets were used instead of the market value of assets.

Limitation of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 6.50%; the municipal bond rate is 3.69% (based on the weekly rate closest to but not later than the measurement date of Fidelity's "20-Year Municipal GO AA Index"); and the resulting single discount rate is 5.42%. PERA staff selected the long-term expected rate of investment return of 6.50% based on input from GRS that the proposed selection would be reasonable for the purpose of the measurement.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense under GASB Statement No. 68 Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Expense

1.	Service Cost	$	36,877
2.	Interest on the Total Pension Liability	$	66,604
3.	Current-Period Benefit Changes	$	-
4.	Employee Contributions (made negative for addition here)	$	(12,843)
5.	Projected Earnings on Plan Investments (made negative for addition here)	$	(67,504)
6.	Pension Plan Administrative Expense	$	371
7.	Other Changes in Plan Fiduciary Net Position	$	-
8.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		
	Arising from Current Reporting Period	$	(3,014)
9.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Current Reporting Period	$	73,358
10.	Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.50%) and actual earnings on Pension Plan Investments		
	Arising from Current Reporting Period	$	26,704
11.	**Increase/(Decrease) from Experience in the Current Reporting Period**	**$**	**120,553**
12.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		
	Arising from Prior Reporting Periods	$	(4,438)
13.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Prior Reporting Periods	$	33,233
14.	Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on Pension Plan Investments		
	Arising from Prior Reporting Periods	$	(34,265)
15.	**Total Pension Expense / (Income)**	**$**	**115,083**

Recognition of Deferred Outflows and Inflows of Resources

Differences between expected and actual experience and changes in assumptions are recognized in pension expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pension through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the current measurement period, the expected remaining service lives of all active employees in the plan was approximately 34,917 years. Additionally, the total plan membership (active employees and inactive employees) was 11,392. As a result, the average of the expected remaining service lives for purposes of recognizing the applicable deferred outflows and inflows of resources established in the current measurement period is 3.00 years (rounded).

Additionally, differences between projected and actual earnings on plan investments should be recognized in pension expense using a systematic and rational method over a closed five-year period. For this purpose, the deferred outflows and inflows of resources are recognized in the pension expense as a level dollar amount over the closed period identified above.

Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Outflows (Inflows) of Resources due to Liabilities		
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$	(9,042)
2. Assumption Changes (gains) or losses	$	220,073
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		3.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	$	(3,014)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$	73,358
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	70,344
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	$	(6,028)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	$	146,715
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	140,687
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	133,519
2. Recognition period for Assets {in years}		5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	$	26,704
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	106,815

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	$ 107,636	$ 8,497	$ 99,139
2. Due to Assets	$ 31,733	$ 39,294	$ (7,561)
3. Total	$ 139,369	$ 47,791	$ 91,578

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	$ -	$ 7,452	$ (7,452)
2. Assumption Changes	$ 107,636	$ 1,045	$ 106,591
3. Net Difference between projected and actual earnings on pension plan investments	$ 31,733	$ 39,294	$ (7,561)
4. Total	$ 139,369	$ 47,791	$ 91,578

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	$ -	$ 10,958	$ (10,958)
2. Assumption Changes	$ 215,272	$ 495	$ 214,777
3. Net Difference between projected and actual earnings on pension plan investments	$ 116,740	$ 107,552	$ 9,188
4. Total	$ 332,012	$ 119,005	$ 213,007

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2023	$ 96,036
2024	$ 99,415
2025	$ (9,147)
2026	$ 26,703
2027	.
Thereafter	$ -
Total	$ 213,007

Recognition of Deferred Outflows and Inflows of Resources
Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) Due to Differences Between Expected and Actual Experience on Liabilities					
2019	$ (1,846)	4.0000	$ (461)	$ 0	0.0000
2020	(12,083)	4.0000	(3,021)	(3,020)	1.0000
2021	(3,822)	4.0000	(956)	(1,910)	2.0000
2022	(9,042)	3.0000	(3,014)	(6,028)	2.0000
Total			**$ (7,452)**	**$ (10,958)**	
Deferred Outflow (Inflow) Due to Assumption Changes					
2019	$ (2,206)	4.0000	$ (551)	$ 0	0.0000
2020	(1,977)	4.0000	(494)	(495)	1.0000
2021	137,113	4.0000	34,278	68,557	2.0000
2022	220,073	3.0000	73,358	146,715	2.0000
Total			**$ 106,591**	**$ 214,777**	
Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments					
2018	$ (17,216)	5.0000	$ (3,444)	$ 0	0.0000
2019	671	5.0000	134	135	1.0000
2020	24,475	5.0000	4,895	9,790	2.0000
2021	(179,252)	5.0000	(35,850)	(107,552)	3.0000
2022	133,519	5.0000	26,704	106,815	4.0000
Total			**$ (7,561)**	**$ 9,188**	
Deferred Outflow (Inflow) Due to All Sources					
Total			**$ 91,578**	**$ 213,007**	

Statement of Fiduciary Net Position
(Dollars in Thousands)

	Market Value			
Assets in Trust	**June 30, 2022**		**June 30, 2021**	
Cash, equivalents, short term securities	$	16,177	$	16,480
Fixed income	$	222,439	$	234,762
Equity	$	489,555	$	604,051
Private Markets	$	247,026	$	180,490
Other	$	-	$	-
Total Assets in Trust	**$**	**975,197**	**$**	**1,035,783**
Assets Receivable	$	743	$	555
Amounts Payable	$	625	$	622
Net Position Restricted for Pensions	**$**	**975,315**	**$**	**1,035,716**

Statement of Changes in Fiduciary Net Position
(Dollars in Thousands)

Change in Assets		**Market Value**	
Year Ending		**June 30, 2022**	**June 30, 2021**
1.	Fund balance at market value at beginning of year	$ 1,035,716	$ 787,322
2.	Adjustment to match beginning of year asset statement	$ -	$ -
3.	Fund balance at market value at beginning of year	$ 1,035,716	$ 787,322
4.	Contributions		
	a. Member	$ 12,843	$ 12,948
	b. Employer	$ 19,227	$ 19,351
	c. Other sources	$ -	$ -
	d. Total contributions	$ 32,070	$ 32,299
5.	Investment income		
	a. Investment income/(loss)	$ (62,508)	$ 239,635
	b. Investment expenses	$ (3,507)	$ (969)
	c. Net subtotal	$ (66,015)	$ 238,666
6.	Other	$ -	$ 1
7.	**Total additions:** *(4.d.) + (5.c.) + (6.)*	**$ (33,945)**	**$ 270,966**
8.	Benefits Paid		
	a. Annuity benefits	$ (23,372)	$ (20,088)
	b. Refunds	$ (2,713)	$ (2,140)
	c. Total benefits paid	$ (26,085)	$ (22,228)
9.	Expenses		
	a. Other	$ -	$ -
	b. Administrative	$ (371)	$ (344)
	c. Total expenses	$ (371)	$ (344)
10.	**Total deductions:** *(8.c.) + (9.c.)*	**$ (26,456)**	**$ (22,572)**
11.	Net increase (decrease) in net position: *(7.) + (10.)*	$ (60,401)	$ 248,394
12.	**Net position restricted for pensions**	**$ 975,315**	**$ 1,035,716**
13.	State Board of Investment calculated investment return	-6.4%	30.2%

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios
Current Period
Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Total pension liability		
1. Service Cost	$	36,877
2. Interest on the Total Pension Liability	$	66,604
3. Changes of benefit terms	$	-
4. Difference between expected and actual experience of the Total Pension Liability**	$	(9,042)
5. Changes of assumptions	$	220,073
6. Benefit payments, including refunds of employee contributions	$	(26,085)
7. Net change in total pension liability	$	288,427
8. Total pension liability – beginning	$	1,019,288
9. Total pension liability – ending	**$**	**1,307,715**
B. Plan fiduciary net position		
1. Contributions – employer	$	19,227
2. Contributions – employee	$	12,843
3. Net investment income	$	(66,015)
4. Benefit payments, including refunds of employee contributions	$	(26,085)
5. Pension Plan Administrative Expense	$	(371)
6. Other	$	-
7. Net change in plan fiduciary net position	$	(60,401)
8. Plan fiduciary net position – beginning	$	1,035,716
9. Plan fiduciary net position – ending	**$**	**975,315**
C. Net pension liability	**$**	**332,400**
D. Plan fiduciary net position as a percentage of the total pension liability		**74.58%**
E. Covered-employee payroll*	**$**	**220,292**
F. Net pension liability as a percentage of covered-employee payroll		**150.89%**

** Assumed equal to actual member contributions divided by employee contribution rate.*
*** Includes impact of changes in expected timing of future post-retirement benefit increases.*

Schedules of Required Supplementary Information
Schedule of Changes in Net Pension Liability and Related Ratios Multiyear
(Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

Fiscal year ending June 30,	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Total Pension Liability										
Service Cost	$ 36,877	$ 32,307	$ 33,172	$ 30,362	$ 45,378	$ 49,202	$ 25,950	$ 25,098	$ 26,488	
Interest on the Total Pension Liability	$ 66,604	$ 61,462	$ 57,354	$ 52,741	$ 53,811	$ 47,336	$ 40,605	$ 37,043	$ 33,955	
Benefit Changes	$ -	$ -	$ -	$ -	$ (66,822)	$ -	$ -	$ -	$ -	
Difference between Expected and Actual Experience	$ (9,042)	$ (3,822)	$ (12,083)	$ (1,846)	$ 1,018	$ (3,516)	$ 382	$ (7,892)	$ (5,327)	
Assumption Changes	$ 220,073	$ 137,113	$ (1,977)	$ (2,206)	$ (209,457)	$ (66,147)	$ 310,332	$ -	$ (34,168)	
Benefit Payments	$ (23,372)	$ (20,088)	$ (17,569)	$ (15,381)	$ (13,183)	$ (11,033)	$ (9,381)	$ (7,777)	$ (6,711)	
Refunds	$ (2,713)	$ (2,140)	$ (2,709)	$ (2,244)	$ (1,364)	$ (1,478)	$ (982)	$ (1,057)	$ (1,105)	
Net Change in Total Pension Liability	$ 288,427	$ 204,832	$ 56,188	$ 61,426	$ (190,619)	$ 14,364	$ 366,906	$ 45,415	$ 13,132	
Total Pension Liability - Beginning	$ 1,019,288	$ 814,456	$ 758,268	$ 696,842	$ 887,461	$ 873,097	$ 506,191	$ 460,776	$ 447,644	
Total Pension Liability - Ending (a)	$ 1,307,715	$ 1,019,288	$ 814,456	$ 758,268	$ 696,842	$ 887,461	$ 873,097	$ 506,191	$ 460,776	
Plan Fiduciary Net Position										
Employer Contributions	$ 19,227	$ 19,351	$ 19,043	$ 18,676	$ 17,871	$ 17,489	$ 16,490	$ 15,736	$ 15,054	
Employee Contributions	$ 12,843	$ 12,948	$ 12,692	$ 12,485	$ 11,956	$ 11,666	$ 11,008	$ 10,472	$ 10,030	
Pension Plan Net Investment Income	$ (66,015)	$ 238,666	$ 31,774	$ 50,853	$ 62,962	$ 78,363	$ 209	$ 20,373	$ 69,451	
Benefit Payments	$ (23,372)	$ (20,088)	$ (17,569)	$ (15,381)	$ (13,183)	$ (11,033)	$ (9,381)	$ (7,777)	$ (6,711)	
Refunds	$ (2,713)	$ (2,140)	$ (2,709)	$ (2,244)	$ (1,364)	$ (1,478)	$ (982)	$ (1,057)	$ (1,105)	
Pension Plan Administrative Expense	$ (371)	$ (344)	$ (332)	$ (361)	$ (308)	$ (330)	$ (290)	$ (247)	$ (236)	
Other	$ -	$ 1	$ -	$ -	$ 1	$ -	$ (2)	$ (1)	$ (1)	
Net Change in Plan Fiduciary Net Position	$ (60,401)	$ 248,394	$ 42,899	$ 64,028	$ 77,935	$ 94,677	$ 17,052	$ 37,499	$ 86,482	
Plan Fiduciary Net Position - Beginning	$ 1,035,716	$ 787,322	$ 744,423	$ 680,395	$ 602,460	$ 507,783	$ 490,731	$ 453,232	$ 366,750	
Plan Fiduciary Net Position - Ending (b)	$ 975,315	$ 1,035,716	$ 787,322	$ 744,423	$ 680,395	$ 602,460	$ 507,783	$ 490,731	$ 453,232	
Net Pension Liability - Ending (a) - (b)	$ 332,400	$ (16,428)	$ 27,134	$ 13,845	$ 16,447	$ 285,001	$ 365,314	$ 15,460	$ 7,544	
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	74.58 %	101.61 %	96.67 %	98.17 %	97.64 %	67.89 %	58.16 %	96.95 %	98.36 %	
Covered Employee Payroll	$ 220,292	$ 222,093	$ 217,702	$ 214,151	$ 205,077	$ 200,103	$ 188,816	$ 179,623	$ 172,041	
Net Pension Liability as a Percentage of Covered Employee Payroll	150.89 %	(7.40)%	12.46 %	6.47 %	8.02 %	142.43 %	193.48 %	8.61 %	4.39 %	

Notes to Schedule:

N/A

Schedules of Required Supplementary Information
Schedule of Net Pension Liability Multiyear
(Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a % of Covered Payroll
2013						
2014	$ 460,776	$ 453,232	$ 7,544	98.36%	$ 172,041	4.39%
2015	$ 506,191	$ 490,731	$ 15,460	96.95%	$ 179,623	8.61%
2016	$ 873,097	$ 507,783	$ 365,314	58.16%	$ 188,816	193.48%
2017	$ 887,461	$ 602,460	$ 285,001	67.89%	$ 200,103	142.43%
2018	$ 696,842	$ 680,395	$ 16,447	97.64%	$ 205,077	8.02%
2019	$ 758,268	$ 744,423	$ 13,845	98.17%	$ 214,151	6.47%
2020	$ 814,456	$ 787,322	$ 27,134	96.67%	$ 217,702	12.46%
2021	$ 1,019,288	$ 1,035,716	$ (16,428)	101.61%	$ 222,093	-7.40%
2022	$ 1,307,715	$ 975,315	$ 332,400	74.58%	$ 220,292	150.89%

Schedule of Contributions Multiyear (Dollars in Thousands)

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2013	$ 14,207	$ 14,498	$ (291)	$ 164,820	8.80%
2014	$ 14,606	$ 15,054	$ (448)	$ 172,041	8.75
2015	$ 13,759	$ 15,736	$ (1,977)	$ 179,623	8.76
2016	$ 16,446	$ 16,490	$ (44)	$ 188,816	8.73
2017	$ 17,269	$ 17,489	$ (220)	$ 200,103	8.74
2018	$ 19,031	$ 17,871	$ 1,160	$ 205,077	8.71
2019	$ 19,466	$ 18,676	$ 790	$ 214,151	8.72
2020	$ 19,593	$ 19,043	$ 550	$ 217,702	8.75
2021	$ 19,167	$ 19,351	$ (184)	$ 222,093	8.71
2022	$ 13,063	$ 19,227	$ (6,164)	$ 220,292	8.73

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Contribution Rates for Fiscal Year Ending June 30, 2022:

Valuation Date	June 30, 2021
Notes	Actuarially determined contribution rates are calculated as of each June 30 and apply to the fiscal year beginning on the day after the measurement date.
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	27 years (30 years when plan is fully funded)
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	2.25%
Payroll Growth	3.00%
Salary Increases	3.00% to 11.00% including inflation
Investment Rate of Return	7.50%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2021 valuation pursuant to an experience study of the period 2015 - 2019.
Mortality	PUB-2010 annuitant generational Public Safety mortality table projected with mortality improvement scale MP-2020, from a base year of 2010. Male rates adjusted by a factor of 0.98.

Other Information:

Notes	The plan is assumed to pay a 2.00% post-retirement benefit increase for all years.
	See separate funding report as of June 30, 2021 for additional detail.

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
2013	
2014	18.6 %
2015	4.4
2016	0.1
2017	15.2
2018	10.4
2019	7.4
2020	4.2
2021	30.2
2022	(6.4)

[1] *Annual money-weighted rate of return, net of investment expenses.*

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to PERA for GASB-compliance purposes. PERA furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

Rate of Return

For the fiscal year ended June 30, 2022, the annual money-weighted rate of return for the Local Government Correctional Service Retirement Plan was -6.4%. The money-weighted rate of return is a method of calculating period-by-period returns on pension plan investments that adjusts for the changing amounts actually invested. For purposes of this schedule, the money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

Ten-Year Schedule of Money-Weighted Investment Return

Ten-year data is not available. Additional years will be provided when they become available.
To request additional information about the computation of the annual money-weighted rate of return and the investments for the Public Employees Retirement Association of Minnesota (including the investments for PERA's defined benefit retirement funds), contact SBI at 60 Empire Drive, Suite 355, St. Paul, Minnesota, 55103, via email at minn.sbi@state.mn.us or telephone at 651.296.3328.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

Asset Allocation

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Estimates for expected future real rates of return (expected returns, net of inflation) were developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce a geometric, long-term expected rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each major asset class that is included in the pension fund's target asset allocation as of June 30, 2022, these estimates are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (geometric)
Domestic Equity	33.5%	5.10%
International Equity	16.5%	5.30%
Private Markets	25.0%	5.90%
Fixed Income	25.0%	0.75%
Unallocated Cash	0.0%	0.00%
Total	100%	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to PERA for GASB compliance purposes. PERA furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

For purposes of this valuation, the long-term expected rate of return assumption is 6.50%. This assumption is based on reviews of inflation and investment return assumptions in our report dated July 12, 2022.

Single Discount Rate

A single discount rate of 5.42% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 6.50% and the municipal bond rate of 3.69%. The projection of cash flows used to determine this single discount rate assumed that plan member, employer, and state contributions will be made at the current statutory contribution rates. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance the benefit payments through the year ending June 30, 2061. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the year ending June 30, 2061, and the municipal bond rate was applied to all benefit payments after the point of asset depletion.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the plan's net pension liability, calculated using a single discount rate of 5.42%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

	1% Decrease 4.42%	Current Single Discount Rate Assumption 5.42%	1% Increase 6.42%
Total Pension Liability	$ 1,560,821	$ 1,307,715	$ 1,108,717
Net Position Restricted for Pensions	$ 975,315	$ 975,315	$ 975,315
Net Pension Liability	**$ 585,506**	**$ 332,400**	**$ 133,402**

GASB Statement No. 68 Reconciliation (Dollars in Thousands)
Current Reporting Period

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Current Period: Deferred Outflows	Current Period: Deferred Inflows	Current Period: Pension Expense*
Balance Beginning of Year	**$ 1,019,288**	**$ 1,035,716**	**$ (16,428)**			
Changes for the Year:						
Service Cost	$ 36,877		$ 36,877			$ 36,877
Interest on Total Pension Liability	66,604		66,604			66,604
Interest on Fiduciary Net Position		$ 67,504	(67,504)			(67,504)
Changes in Benefit Terms	-		-			-
Liability Experience Gains and Losses	(9,042)		(9,042)	$ -	$ 6,028	(3,014)
Changes in Assumptions	220,073		220,073	146,715	-	73,358
Contributions - Employer		19,227	(19,227)			
Contributions - Employees		12,843	(12,843)			(12,843)
Asset Gain/(Loss)		(133,519)	133,519	106,815	-	26,704
Benefit Payouts	(26,085)	(26,085)				
Administrative Expenses		(371)	371			371
Other		-	-			-
Net Changes	**$ 288,427**	**$ (60,401)**	**$ 348,828**	**$ 253,530**	**$ 6,028**	**$ 120,553**
Balance End of Year	**$ 1,307,715**	**$ 975,315**	**$ 332,400**			

** Pension Expense from Experience in the Current Reporting Period.*

GASB Statement No. 68 Reconciliation (Dollars in Thousands)
Current and Prior Reporting Periods

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Net Deferred Outflows Prior Year	Total Pension Expense*
Balance Beginning of Year	**$ 1,019,288**	**$ 1,035,716**	**$ (16,428)**				
Changes for the Year:							
Service Cost	$ 36,877		$ 36,877				$ 36,877
Interest on Total Pension Liability	66,604		66,604				66,604
Interest on Fiduciary Net Position		$ 67,504	(67,504)				(67,504)
Changes in Benefit Terms	-		-				-
Liability Experience Gains and Losses	(9,042)		(9,042)	$ -	$ 10,958	$ (9,368)	(7,452)
Changes in Assumptions	220,073		220,073	215,272	495	101,295	106,591
Contributions - Employer		19,227	(19,227)				
Contributions - Employees		12,843	(12,843)				(12,843)
Asset Gain/(Loss)		(133,519)	133,519	116,740	107,552	(131,892)	(7,561)
Benefit Payouts	(26,085)	(26,085)					
Administrative Expenses		(371)	371				371
Other		-	-				-
Net Changes	**$ 288,427**	**$ (60,401)**	**$ 348,828**				**$ 115,083**
Balance End of Year	**$ 1,307,715**	**$ 975,315**	**$ 332,400**	**$ 332,012**	**$ 119,005**	**$ (39,965)**	

** Pension Expense from Experience in the Current and Prior Reporting Periods.*

Summary of Population Statistics

		Terminated		Recipients			
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
Members on July 1, 2021	**3,788**	**3,832**	**2,200**	**1,277**	**216**	**79**	**11,392**
New members	697						**697**
Return to active	43	(15)	(28)	0	0	0	**0**
Terminated non-vested	(448)	0	448	0	0	0	**0**
Service retirements	(97)	(53)	0	150	0	0	**0**
Terminated deferred	(266)	266	0	0	0	0	**0**
Terminated refund/transfer	(136)	(45)	(178)	0	0	0	**(359)**
Deaths	(7)	(10)	(3)	(20)	(4)	(1)	**(45)**
New beneficiary	0	0	0	0	0	9	**9**
Disabled	(10)	0	0	0	10	0	**0**
Data adjustments	0	154	41	0	1	0	**196**
Net change	(224)	297	280	130	7	8	**498**
Members on July 1, 2022	**3,564**	**4,129**	**2,480**	**1,407**	**223**	**87**	**11,890**

SECTION E

SUMMARY OF BENEFITS

Summary of Plan Provisions

Following is a summary of the major plan provisions used in the valuation of this report. PERA is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30.
Eligibility	Local government employees in covered correctional service for a county administered jail or correctional facility or in a regional correctional facility administered by multiple counties, who are directly responsible for security, custody and control of persons confined in jail or facility, who are expected to respond to incidents within the jail or facility, and who are not members of the Public Employees Police and Fire Fund.
Contributions	Shown as a percent of salary: Member 5.83% Employer 8.75% Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
Allowable service	Local Government Correctional Service during which member contributions were made (effective July 1, 1999). May also include certain leaves of absence, military service and periods while temporary Worker's Compensation is paid.
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leaves and sick leave payments, severance payments, Workers' Compensation benefits and employer-paid flexible spending accounts, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.
Average salary	Average of the five highest successive years of salary. Average Salary is based on all Allowable Service if less than five years.
Vesting	Hired before July 1, 2010: 100% vested after 3 years of Allowable Service; Hired after June 30, 2010: 50% vested after 5 years of Allowable Service; 60% vested after 6 years of Allowable Service; 70% vested after 7 years of Allowable Service; 80% vested after 8 years of Allowable Service; 90% vested after 9 years of Allowable Service; and 100% vested after 10 years of Allowable Service.
Retirement Normal retirement benefit	
Age/service requirement	Age 55 and vested. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.
Amount	1.9% of Average Salary for each year of Allowable Service, pro rata for completed months, adjusted for partial vesting if applicable.

Summary of Plan Provisions (Continued)

Retirement (Concluded)	
Early retirement	
Age/service requirement	Age 50 and vested.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with actuarial reduction to commencement age assuming 3% augmentation to age 55 (2.50% if hired after June 30, 2006). Augmentation adjustment is phased out over a five-year period starting July 1, 2019, resulting in no augmentation adjustment after June 30, 2024.
Form of payment	Life annuity. Actuarially equivalent options are: 25%, 50%, 75% or 100% Joint and Survivor. If a Joint and Survivor benefit is elected and the beneficiary predeceases the annuitant, the annuitant's benefit increases to the Life Annuity amount. This "bounce back" is subsidized by the plan.
Benefit increases	Benefit recipients receive increases each year in January based upon 100% of the current Social Security increase, not less than 1.0% and not more than 2.5%, beginning January 1, 2019. If the funding status on a market value basis declines to 85% for two consecutive years or 80% for one year, the maximum increase will be lowered to 1.5%. A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of June 30 will receive a pro rata increase.
Disability	
Duty disability	
Age/service requirement	Member who cannot perform his duties as a direct result of a disability relating to an act of duty specific to protecting the property and personal safety of others.
Amount	47.50% of Average Salary plus 1.90% of Average Salary for each year in excess of 25 years of Allowable Service (pro rata for completed months). Payment begins at disability and ends at age 65 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.
Regular disability	
Age/service requirement	At least one year of Allowable Service and a disability preventing member from performing normal duties that arise out of activities not related to covered employment or while at work, activities related to duties that do not present inherent dangers specific to occupation.

Summary of Plan Provisions (Continued)

Disability (Concluded)	
Amount	Normal Retirement Benefit based on Allowable Service (minimum of 10 years) and Average Salary at disability. Payment begins at disability and ends at age 65 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.
<u>Retirement benefit</u>	
Age/service requirement	Age 65 with continued disability.
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before age 65 or the normal retirement benefit available at age 65, or an actuarially equivalent optional annuity.
<u>Form of payment</u>	Same as for retirement.
<u>Benefit increases</u>	Same as for retirement.
Death	
<u>Surviving spouse benefit</u>	
Age/service requirement	Vested active member at any age or vested former member age 50 or older who dies before retirement or disability benefit commences. If an active member dies, benefits may commence immediately, regardless of age.
Amount	Surviving spouse receives the 100% joint and survivor benefit using the Normal Retirement formula above. If commencement is prior to age 55, the appropriate early retirement formula described above applies except that one-half the monthly reduction factor is used from age 50 to the commencement age. In lieu of this benefit, the surviving spouse may elect a refund of contributions with interest or an actuarially equivalent term certain annuity (lump sum payable to estate at death).
Benefit increases	Same as for retirement.
<u>Surviving dependent children's benefit</u>	
Age/service requirement	If no surviving spouse, all dependent children (biological or adopted) below age 20 who are dependent for more than half of their support on deceased member.
Amount	Actuarially equivalent to surviving spouse 100% joint and survivor annuity payable to the later of age 20 or five years. The amount is to be proportionally divided among surviving children.

Summary of Plan Provisions (Continued)

Death (Concluded)	
Refund of contributions	
Age/service requirement	Active employee dies and survivor benefits paid are less than member's contributions or a former employee dies before annuity begins.
Amount	If no survivor benefits are paid, the member's contributions with 6.00% interest until June 30, 2011; 4.00% to June 30, 2018; 3.00% thereafter. If survivor benefits are paid and accumulated contributions exceed total payments to the surviving spouse and children, then the remaining contributions are paid out.
Termination	
Refund of contributions	
Age/service requirement	Termination of local government service.
Amount	Member's contributions with 6.00% interest through June 30, 2011. Beginning July 1, 2011, a member's contributions increase at 4.00% interest. Beginning July 1, 2018, a member's contributions increase at 3.00% interest. If a member is vested, a deferred annuity may be elected in lieu of a refund.
Deferred benefit	
Age/service requirement	Partially or fully vested.
Amount	Benefit computed under law in effect at termination and increased by the following percentage (augmentation), compounded annually, if termination of employment is prior to January 1, 2012: (a.) 3.00% (2.50% if hired after June 30, 2006) until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012; (b.) 5.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of the date the annuity begins and January 1, 2012; (c.) 1.00% from January 1, 2012 through December 31, 2018; and (d.) 0.00% thereafter. If a member terminates employment after 2011, they are not eligible for augmentation.
Form of payment	Same as for retirement.
Actuarial equivalent factors	Effective July 1, 2019, actuarially equivalent factors based on the RP-2014 mortality table for healthy annuitants for a member turning age 55 in 2021, reflecting projected mortality improvements using Scale MP-2017, male rates multiplied by 0.96, blended 65% males, 4.88% post-retirement interest, and 7.5% pre-retirement interest. Reflecting statutory requirements, joint and survivor factors are based on an interest assumption of 6.50%.

Summary of Plan Provisions (Concluded)

Combined service annuity	Members are eligible for combined service benefits if they: (a.) Meet minimum retirement age for each plan participated in and total public service meets the vesting requirements of each plan; or (b.) Have three or more years of service under PERA and the covered fund(s) (if hired prior to July 1, 2010). Other requirements for combined service include: (a.) Member must have at least six months of allowable service credit in each plan worked under; and (b.) Member may not be in receipt of a benefit from another plan. Members who meet the above requirements must have their benefit based on the following: (a.) Allowable service in all covered plans is combined in order to determine eligibility for early retirement. (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Changes in plan provisions	There were no changes in plan provisions since the prior valuation.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Methods Used for the Determination of Total Pension Liability and Related Values

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Valuation of Future Post-Retirement Benefit Increases

Benefit increases after retirement will equal 100% of the Social Security Cost of Living Adjustment, not less than 1.0% and not more than 2.50%, beginning January 1, 2019. Stochastic modeling was used to determine the assumption that benefit increases will equal 2.00% per year. This is only an assumption; actual increases will depend on actual experience. If the funding status on a market value basis declines to 85% for two consecutive years or 80% for one year, the maximum increase will be lowered to 1.50%.

To determine an assumption regarding a future change in the post-retirement benefit increase, we performed a projection of liabilities and assets based on the following methods and assumptions:

- Future investment returns of 6.50%.
- Liabilities and normal cost based on statutory funding assumptions.
    - Specifically, a discount rate of 7.50% was used.
- Open group; stable active population (new member profile based on average new members hired in recent years).

Based on these assumptions and methods, the projection indicates that this plan is expected to deteriorate to the funding ratio threshold required to lower the maximum benefit increase to 1.50% in 2055. This COLA change is reflected in the calculations in this report.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions Used for the Determination of Total Pension Liability and Related Values

The following assumptions were used in valuing the liabilities and benefits under the plan. The assumptions are based on the last experience study dated July 10, 2020, and a review of inflation and investment assumptions dated July 12, 2022. PERA staff selected the long-term expected rate of investment return of 6.50% based on input from GRS that the proposed selection would be reasonable for the purpose of the measurement.

The Allowance for Combined Service Annuity assumptions are based on an analysis completed by the LCPR actuary and documented in a report dated October 2016.

Investment return	6.50% per annum.
Single Discount Rate	5.42% per annum.
Benefit increases after retirement	2.00% per annum through December 31, 2054; 1.50% per annum thereafter.
Salary increases	Reported salary at valuation date increased according to the rate table to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year.
Inflation	2.25% per year.
Payroll growth	3.00% per year.
Mortality rates	
Healthy pre-retirement	Pub-2010 Public Safety Mortality Table adjusted for mortality improvements using projection scale MP-2021.
Healthy post-retirement	Pub-2010 Healthy Retired Public Safety Mortality Table adjusted for mortality improvements using projection scale MP-2021. Male rates are adjusted by a factor of 0.98.
Disabled	Pub-2010 Public Safety Disabled Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2021. Male rates are adjusted by a factor of 1.05.
Notes	The Pub-2010 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rates for ages 50 to 120. We have extended the annuitant mortality table as needed for members and beneficiaries younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the rate table. Members who have attained the highest assumed retirement age are assumed to retire in one year. Note that plan changes reflected in this report may result in behavior changes that are not anticipated in the current retirement rates.
Withdrawal	Select and Ultimate rates based on actual experience. Ultimate rates after the third year are shown in the rate table. Select rates in the first three years are:

Year	Select Withdrawal Rates
1	27%
2	23%
3	17%

Summary of Actuarial Assumptions (Continued)

Disability	Age-related rates based on experience; see table of sample rates. All incidences are assumed to be duty-related.
Allowance for combined service annuity	Liabilities for former members are increased by 35.0% for vested members and 1.0% for non-vested members to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	In the valuation year, equal to prior year administrative expenses expressed as percentage of prior year projected payroll. In each subsequent year, equal to the initial administrative expense percentage applied to payroll for the closed group.
Refund of contributions	For non-vested members, account balances accumulate interest until the assumed commencement date and are discounted back to the valuation date. Active members decrementing after becoming eligible for a benefit are assumed to take the contributions accumulated with interest if larger than the value of the benefit.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 55.
Percentage married	75% of active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Females are assumed to be three years younger than their male spouses. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 10% elect 25% Joint & Survivor option 15% elect 50% Joint & Survivor option 5% elect 75% Joint & Survivor option 50% elect 100% Joint & Survivor option Females: 10% elect 25% Joint & Survivor option 10% elect 50% Joint & Survivor option 5% elect 75% Joint & Survivor option 25% elect 100% Joint & Survivor option Remaining married members and unmarried members are assumed to elect the Straight Life option. Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrements are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.
Pay increases	Pay increases are assumed to happen at the beginning of the fiscal year. This is equivalent to assuming that reported earnings are pensionable earnings for the year ending on the valuation date.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided. In cases where submitted data was missing or incomplete, the following assumptions, based on average results for applicable members, were applied: <u>Data for active members:</u> There were 88 members reported with a salary less than or equal to $100 (after annualization). We used prior year salary (37 members), if available; otherwise high five salary with a 10% load to account for salary increases (47 members). If neither prior year salary or high five salary was available, we assumed a value of $43,000. There were three members reported without a date of birth; we assumed the members were hired at age 30. There were 114 members reported without a gender; male was assumed. <u>Data for terminated members:</u> We calculated benefits for these members using the reported Average Salary and credited service. There were no members reported without Average Salary. If credited service was not reported (37 members), we used elapsed time from hire date to termination date (19 members), otherwise we assumed nine years of service. If termination date was not reported (21 members), we assumed the termination date was equal to the hire date plus credited service, otherwise the valuation date. If the reported termination date occurs prior to the reported hire date, the two dates were swapped. There were no members reported without a date of birth. There were nine members reported without a gender; male was assumed. <u>Data for retired members:</u> There were three members reported without a gender; male was assumed. There were no members reported without a date of birth or benefit. Because PERA reclassifies disabled members as retirees once the member reaches Normal Retirement Age, we compare the members that PERA reports as retirees to our disabled group from the last valuation. If a member was disabled in the prior valuation, we reclassify that member as a disabled retiree in this year's valuation. We reclassified 92 retirees as disabled retirees in this valuation.
Changes in actuarial assumptions	The mortality improvement scale was changed from MP-2020 to MP-2021. The Single Discount Rate was changed from 6.50% to 5.42%. The benefit increase assumption was changed from 2.00% per annum to 2.00% per annum through December 31, 2054 and 1.50% per annum thereafter.

Summary of Actuarial Assumptions (Continued)

Age in 2022	Percentage of Members Dying Each Year* Healthy Post-Retirement Mortality** Male	Healthy Post-Retirement Mortality** Female	Healthy Pre-Retirement Mortality** Male	Healthy Pre-Retirement Mortality** Female	Disability Mortality** Male	Disability Mortality** Female
20	0.04%	0.02%	0.04%	0.02%	0.11%	0.05%
25	0.04	0.02	0.04	0.02	0.12	0.08
30	0.06	0.04	0.06	0.04	0.18	0.13
35	0.07	0.05	0.07	0.05	0.21	0.16
40	0.08	0.06	0.07	0.05	0.22	0.18
45	0.12	0.08	0.08	0.06	0.25	0.20
50	0.17	0.14	0.11	0.08	0.33	0.28
55	0.28	0.25	0.17	0.12	0.48	0.45
60	0.50	0.44	0.26	0.16	0.77	0.69
65	0.81	0.68	0.39	0.20	1.17	0.93
70	1.30	1.08	0.65	0.37	1.70	1.31
75	2.26	1.89	1.17	0.75	2.77	2.02
80	4.16	3.43	2.22	1.56	4.89	3.43
85	7.73	6.14	7.06	5.38	8.35	6.14
90	13.90	10.83	14.19	10.83	14.90	10.83

* *Generally, mortality rates are expected to increase as age increases (with the exception of young ages, where expected mortality may decrease as age increases). In cases where the application of the projection scale would reverse the nature of this trend, standard mortality rates have been adjusted slightly. The adjustment has no material effect on these results.*

** *Rates are adjusted for mortality improvement using Scale MP-2021, from a base year of 2010.*

Age	Withdrawal Rates Male	Withdrawal Rates Female	Rates of Disability Retirement Male	Rates of Disability Retirement Female
20	17.00%	17.00%	0.04%	0.04%
25	17.00	17.00	0.06	0.06
30	11.00	13.00	0.10	0.08
35	7.50	9.00	0.18	0.17
40	5.50	6.50	0.21	0.18
45	3.50	4.75	0.31	0.39
50	3.00	3.00	0.55	0.70
55	0.00	0.00	0.78	0.93
60	0.00	0.00	0.92	1.30
65	0.00	0.00	1.00	1.30

Summary of Actuarial Assumptions (Concluded)

Age	Retirement Rate
50	5%
51	5
52	5
53	5
54	7
55	15
56	10
57	11
58	11
59	11
60	15
61	15
62	25
63	25
64	30
65	40
66	50
67	40
68	30
69	40
70+	100

Salary Scale	
Age	Increase
20	11.00%
25	7.75
30	6.00
35	5.50
40	4.75
45	4.00
50	3.75
55	3.50
60	3.00
65	3.00
70+	3.00

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the Fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the long-term expected rate of return is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this calculation, the expected rate of return on pension plan investments is 6.50%; the municipal bond rate is 3.69%; and **the resulting single discount rate is 5.42%**.

If the funding status based on the market value of assets declines to 85% for two consecutive years or 80% for one year, the maximum increase of 2.50% will be lowered to 1.50%. The benefit payments in this projection are based on the assumption that benefit increases (currently subject to a maximum of 2.50%) will equal 2.00% per year through 2054 and 1.50% per year thereafter.

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate. It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

Single Discount Rate Development
Projection of Contributions (Dollars in Thousands)

	Payroll			Projected Contributions			
Fiscal Year Ending	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll Toward Current UAL*	Total Contributions
2022	$ 220,292	$ -	$ 220,292				
2023	$ 214,814	$ 9,199	$ 224,013	$ 12,524	$ 18,796	$ -	$ 31,320
2024	$ 199,474	$ 31,259	$ 230,733	$ 11,629	$ 17,454	$ -	$ 29,083
2025	$ 187,736	$ 49,919	$ 237,655	$ 10,945	$ 16,427	$ -	$ 27,372
2026	$ 178,011	$ 66,774	$ 244,785	$ 10,378	$ 15,576	$ -	$ 25,954
2027	$ 169,093	$ 83,035	$ 252,128	$ 9,858	$ 14,796	$ -	$ 24,654
2028	$ 160,740	$ 98,952	$ 259,692	$ 9,371	$ 14,065	$ -	$ 23,436
2029	$ 152,976	$ 114,507	$ 267,483	$ 8,918	$ 13,385	$ -	$ 22,303
2030	$ 145,605	$ 129,902	$ 275,507	$ 8,489	$ 12,740	$ -	$ 21,229
2031	$ 138,461	$ 145,312	$ 283,773	$ 8,072	$ 12,115	$ -	$ 20,187
2032	$ 131,511	$ 160,775	$ 292,286	$ 7,667	$ 11,507	$ -	$ 19,174
2033	$ 124,803	$ 176,251	$ 301,054	$ 7,276	$ 10,920	$ -	$ 18,196
2034	$ 118,288	$ 191,798	$ 310,086	$ 6,896	$ 10,350	$ -	$ 17,246
2035	$ 111,902	$ 207,487	$ 319,389	$ 6,524	$ 9,791	$ -	$ 16,315
2036	$ 105,665	$ 223,305	$ 328,970	$ 6,160	$ 9,246	$ -	$ 15,406
2037	$ 99,592	$ 239,247	$ 338,839	$ 5,806	$ 8,714	$ -	$ 14,520
2038	$ 93,712	$ 255,292	$ 349,004	$ 5,463	$ 8,200	$ -	$ 13,663
2039	$ 88,001	$ 271,474	$ 359,475	$ 5,130	$ 7,700	$ -	$ 12,830
2040	$ 82,383	$ 287,876	$ 370,259	$ 4,803	$ 7,209	$ -	$ 12,012
2041	$ 76,859	$ 304,508	$ 381,367	$ 4,481	$ 6,725	$ -	$ 11,206
2042	$ 71,430	$ 321,378	$ 392,808	$ 4,164	$ 6,250	$ -	$ 10,414
2043	$ 66,143	$ 338,449	$ 404,592	$ 3,856	$ 5,787	$ -	$ 9,643
2044	$ 60,923	$ 355,807	$ 416,730	$ 3,552	$ 5,331	$ -	$ 8,883
2045	$ 55,717	$ 373,514	$ 429,231	$ 3,248	$ 4,875	$ -	$ 8,123
2046	$ 50,630	$ 391,478	$ 442,108	$ 2,952	$ 4,430	$ -	$ 7,382
2047	$ 45,658	$ 409,714	$ 455,372	$ 2,662	$ 3,995	$ -	$ 6,657
2048	$ 40,870	$ 428,163	$ 469,033	$ 2,383	$ 3,576	$ -	$ 5,959
2049	$ 36,323	$ 446,781	$ 483,104	$ 2,118	$ 3,178	$ -	$ 5,296
2050	$ 32,017	$ 465,580	$ 497,597	$ 1,867	$ 2,802	$ -	$ 4,669
2051	$ 27,981	$ 484,544	$ 512,525	$ 1,631	$ 2,448	$ -	$ 4,079
2052	$ 24,160	$ 503,741	$ 527,901	$ 1,409	$ 2,114	$ -	$ 3,523
2053	$ 20,616	$ 523,122	$ 543,738	$ 1,202	$ 1,804	$ -	$ 3,006
2054	$ 17,356	$ 542,694	$ 560,050	$ 1,012	$ 1,519	$ -	$ 2,531
2055	$ 14,359	$ 562,492	$ 576,851	$ 837	$ 1,256	$ -	$ 2,093
2056	$ 11,684	$ 582,473	$ 594,157	$ 681	$ 1,022	$ -	$ 1,703
2057	$ 9,346	$ 602,635	$ 611,981	$ 545	$ 818	$ -	$ 1,363
2058	$ 7,353	$ 622,988	$ 630,341	$ 429	$ 643	$ -	$ 1,072
2059	$ 5,672	$ 643,579	$ 649,251	$ 331	$ 496	$ -	$ 827
2060	$ 4,276	$ 664,453	$ 668,729	$ 249	$ 374	$ -	$ 623
2061	$ 3,148	$ 685,643	$ 688,791	$ 184	$ 275	$ -	$ 459
2062	$ 2,247	$ 707,207	$ 709,454	$ 131	$ 197	$ -	$ 328
2063	$ 1,547	$ 729,191	$ 730,738	$ 90	$ 135	$ -	$ 225
2064	$ 1,027	$ 751,633	$ 752,660	$ 60	$ 90	$ -	$ 150
2065	$ 653	$ 774,587	$ 775,240	$ 38	$ 57	$ -	$ 95
2066	$ 397	$ 798,100	$ 798,497	$ 23	$ 35	$ -	$ 58
2067	$ 229	$ 822,223	$ 822,452	$ 13	$ 20	$ -	$ 33
2068	$ 126	$ 846,999	$ 847,125	$ 7	$ 11	$ -	$ 18
2069	$ 66	$ 872,473	$ 872,539	$ 4	$ 6	$ -	$ 10
2070	$ 31	$ 898,684	$ 898,715	$ 2	$ 3	$ -	$ 5
2071	$ 13	$ 925,664	$ 925,677	$ 1	$ 1	$ -	$ 2
2072	$ 5	$ 953,442	$ 953,447	$ -	$ -	$ -	$ -

* *Equal to total contributions (14.58% of payroll for new employees) net of normal cost and expenses (15.56% of payroll), not less than 0.00%.*

Single Discount Rate Development
Projection of Contributions (Dollars in Thousands) (Concluded)

	Payroll			Projected Contributions			
Fiscal Year Ending	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll Toward Current UAL*	Total Contributions
2073	$ 1	$ 982,050	$ 982,051	$ -	$ -	$ -	$ -
2074	$ -	$ 1,011,512	$ 1,011,512	$ -	$ -	$ -	$ -
2075	$ -	$ 1,041,857	$ 1,041,857	$ -	$ -	$ -	$ -
2076	$ -	$ 1,073,113	$ 1,073,113	$ -	$ -	$ -	$ -
2077	$ -	$ 1,105,307	$ 1,105,307	$ -	$ -	$ -	$ -
2078	$ -	$ 1,138,466	$ 1,138,466	$ -	$ -	$ -	$ -
2079	$ -	$ 1,172,620	$ 1,172,620	$ -	$ -	$ -	$ -
2080	$ -	$ 1,207,798	$ 1,207,798	$ -	$ -	$ -	$ -
2081	$ -	$ 1,244,032	$ 1,244,032	$ -	$ -	$ -	$ -
2082	$ -	$ 1,281,353	$ 1,281,353	$ -	$ -	$ -	$ -
2083	$ -	$ 1,319,794	$ 1,319,794	$ -	$ -	$ -	$ -
2084	$ -	$ 1,359,388	$ 1,359,388	$ -	$ -	$ -	$ -
2085	$ -	$ 1,400,169	$ 1,400,169	$ -	$ -	$ -	$ -
2086	$ -	$ 1,442,174	$ 1,442,174	$ -	$ -	$ -	$ -
2087	$ -	$ 1,485,440	$ 1,485,440	$ -	$ -	$ -	$ -
2088	$ -	$ 1,530,003	$ 1,530,003	$ -	$ -	$ -	$ -
2089	$ -	$ 1,575,903	$ 1,575,903	$ -	$ -	$ -	$ -
2090	$ -	$ 1,623,180	$ 1,623,180	$ -	$ -	$ -	$ -
2091	$ -	$ 1,671,875	$ 1,671,875	$ -	$ -	$ -	$ -
2092	$ -	$ 1,722,032	$ 1,722,032	$ -	$ -	$ -	$ -
2093	$ -	$ 1,773,693	$ 1,773,693	$ -	$ -	$ -	$ -
2094	$ -	$ 1,826,903	$ 1,826,903	$ -	$ -	$ -	$ -
2095	$ -	$ 1,881,710	$ 1,881,710	$ -	$ -	$ -	$ -
2096	$ -	$ 1,938,162	$ 1,938,162	$ -	$ -	$ -	$ -
2097	$ -	$ 1,996,307	$ 1,996,307	$ -	$ -	$ -	$ -
2098	$ -	$ 2,056,196	$ 2,056,196	$ -	$ -	$ -	$ -
2099	$ -	$ 2,117,882	$ 2,117,882	$ -	$ -	$ -	$ -
2100	$ -	$ 2,181,418	$ 2,181,418	$ -	$ -	$ -	$ -
2101	$ -	$ 2,246,861	$ 2,246,861	$ -	$ -	$ -	$ -
2102	$ -	$ 2,314,267	$ 2,314,267	$ -	$ -	$ -	$ -
2103	$ -	$ 2,383,695	$ 2,383,695	$ -	$ -	$ -	$ -
2104	$ -	$ 2,455,205	$ 2,455,205	$ -	$ -	$ -	$ -
2105	$ -	$ 2,528,861	$ 2,528,861	$ -	$ -	$ -	$ -
2106	$ -	$ 2,604,727	$ 2,604,727	$ -	$ -	$ -	$ -
2107	$ -	$ 2,682,869	$ 2,682,869	$ -	$ -	$ -	$ -
2108	$ -	$ 2,763,355	$ 2,763,355	$ -	$ -	$ -	$ -
2109	$ -	$ 2,846,256	$ 2,846,256	$ -	$ -	$ -	$ -
2110	$ -	$ 2,931,644	$ 2,931,644	$ -	$ -	$ -	$ -
2111	$ -	$ 3,019,593	$ 3,019,593	$ -	$ -	$ -	$ -
2112	$ -	$ 3,110,181	$ 3,110,181	$ -	$ -	$ -	$ -
2113	$ -	$ 3,203,486	$ 3,203,486	$ -	$ -	$ -	$ -
2114	$ -	$ 3,299,591	$ 3,299,591	$ -	$ -	$ -	$ -
2115	$ -	$ 3,398,578	$ 3,398,578	$ -	$ -	$ -	$ -
2116	$ -	$ 3,500,536	$ 3,500,536	$ -	$ -	$ -	$ -
2117	$ -	$ 3,605,552	$ 3,605,552	$ -	$ -	$ -	$ -
2118	$ -	$ 3,713,718	$ 3,713,718	$ -	$ -	$ -	$ -
2119	$ -	$ 3,825,130	$ 3,825,130	$ -	$ -	$ -	$ -
2120	$ -	$ 3,939,884	$ 3,939,884	$ -	$ -	$ -	$ -
2121	$ -	$ 4,058,080	$ 4,058,080	$ -	$ -	$ -	$ -
2122	$ -	$ 4,179,823	$ 4,179,823	$ -	$ -	$ -	$ -

* *Equal to total contributions (14.58% of payroll for new employees) net of normal cost and expenses (15.56% of payroll), not less than 0.00%.*

Single Discount Rate Development
Projection of Plan Fiduciary Net Position (Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 6.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2023	$ 975,315	$ 31,320	$ 31,667	$ 344	$ 63,373	$ 1,037,997
2024	$ 1,037,997	$ 29,083	$ 34,746	$ 319	$ 67,278	$ 1,099,293
2025	$ 1,099,293	$ 27,372	$ 38,314	$ 300	$ 71,094	$ 1,159,145
2026	$ 1,159,145	$ 25,954	$ 42,164	$ 285	$ 74,817	$ 1,217,467
2027	$ 1,217,467	$ 24,654	$ 46,085	$ 271	$ 78,441	$ 1,274,206
2028	$ 1,274,206	$ 23,436	$ 50,344	$ 257	$ 81,955	$ 1,328,996
2029	$ 1,328,996	$ 22,303	$ 54,988	$ 245	$ 85,332	$ 1,381,398
2030	$ 1,381,398	$ 21,229	$ 59,713	$ 233	$ 88,553	$ 1,431,234
2031	$ 1,431,234	$ 20,187	$ 64,672	$ 222	$ 91,600	$ 1,478,127
2032	$ 1,478,127	$ 19,174	$ 69,562	$ 210	$ 94,460	$ 1,521,989
2033	$ 1,521,989	$ 18,196	$ 75,122	$ 200	$ 97,102	$ 1,561,965
2034	$ 1,561,965	$ 17,246	$ 80,696	$ 189	$ 99,492	$ 1,597,818
2035	$ 1,597,818	$ 16,315	$ 86,224	$ 179	$ 101,616	$ 1,629,346
2036	$ 1,629,346	$ 15,406	$ 91,833	$ 169	$ 103,458	$ 1,656,208
2037	$ 1,656,208	$ 14,520	$ 97,668	$ 159	$ 104,989	$ 1,677,890
2038	$ 1,677,890	$ 13,663	$ 103,377	$ 150	$ 106,189	$ 1,694,215
2039	$ 1,694,215	$ 12,830	$ 109,222	$ 141	$ 107,036	$ 1,704,718
2040	$ 1,704,718	$ 12,012	$ 114,891	$ 132	$ 107,512	$ 1,709,219
2041	$ 1,709,219	$ 11,206	$ 120,492	$ 123	$ 107,600	$ 1,707,410
2042	$ 1,707,410	$ 10,414	$ 125,790	$ 114	$ 107,288	$ 1,699,208
2043	$ 1,699,208	$ 9,643	$ 130,759	$ 106	$ 106,571	$ 1,684,557
2044	$ 1,684,557	$ 8,883	$ 135,773	$ 97	$ 105,434	$ 1,663,004
2045	$ 1,663,004	$ 8,123	$ 140,970	$ 89	$ 103,843	$ 1,633,911
2046	$ 1,633,911	$ 7,382	$ 145,950	$ 81	$ 101,769	$ 1,597,031
2047	$ 1,597,031	$ 6,657	$ 150,903	$ 73	$ 99,191	$ 1,551,903
2048	$ 1,551,903	$ 5,959	$ 155,525	$ 65	$ 96,088	$ 1,498,360
2049	$ 1,498,360	$ 5,296	$ 159,737	$ 58	$ 92,452	$ 1,436,313
2050	$ 1,436,313	$ 4,669	$ 163,562	$ 51	$ 88,276	$ 1,365,645
2051	$ 1,365,645	$ 4,079	$ 166,887	$ 45	$ 83,558	$ 1,286,350
2052	$ 1,286,350	$ 3,523	$ 169,841	$ 39	$ 78,292	$ 1,198,285
2053	$ 1,198,285	$ 3,006	$ 172,321	$ 33	$ 72,472	$ 1,101,409
2054	$ 1,101,409	$ 2,531	$ 174,268	$ 28	$ 66,097	$ 995,741
2055	$ 995,741	$ 2,093	$ 175,692	$ 23	$ 59,170	$ 881,289
2056	$ 881,289	$ 1,703	$ 175,753	$ 19	$ 51,716	$ 758,936
2057	$ 758,936	$ 1,363	$ 174,717	$ 15	$ 43,785	$ 629,352
2058	$ 629,352	$ 1,072	$ 173,103	$ 12	$ 35,405	$ 492,714
2059	$ 492,714	$ 827	$ 170,950	$ 9	$ 26,585	$ 349,167
2060	$ 349,167	$ 623	$ 168,317	$ 7	$ 17,332	$ 198,798
2061	$ 198,798	$ 459	$ 165,273	$ 5	$ 7,650	$ 41,629
2062	$ 41,629	$ 328	$ 161,855	$ 4	$ -	$ -
2063	$ -	$ 225	$ 158,087	$ 2	$ -	$ -
2064	$ -	$ 150	$ 153,992	$ 2	$ -	$ -
2065	$ -	$ 95	$ 149,605	$ 1	$ -	$ -
2066	$ -	$ 58	$ 144,960	$ 1	$ -	$ -
2067	$ -	$ 33	$ 140,091	$ -	$ -	$ -
2068	$ -	$ 18	$ 135,032	$ -	$ -	$ -
2069	$ -	$ 10	$ 129,812	$ -	$ -	$ -
2070	$ -	$ 5	$ 124,461	$ -	$ -	$ -
2071	$ -	$ 2	$ 119,004	$ -	$ -	$ -
2072	$ -	$ -	$ 113,462	$ -	$ -	$ -

Single Discount Rate Development
Projection of Plan Fiduciary Net Position (Dollars in Thousands) (Concluded)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 6.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2073	$ -	$ -	$ 107,857	$ -	$ -	$ -
2074	$ -	$ -	$ 102,209	$ -	$ -	$ -
2075	$ -	$ -	$ 96,539	$ -	$ -	$ -
2076	$ -	$ -	$ 90,867	$ -	$ -	$ -
2077	$ -	$ -	$ 85,215	$ -	$ -	$ -
2078	$ -	$ -	$ 79,602	$ -	$ -	$ -
2079	$ -	$ -	$ 74,051	$ -	$ -	$ -
2080	$ -	$ -	$ 68,582	$ -	$ -	$ -
2081	$ -	$ -	$ 63,214	$ -	$ -	$ -
2082	$ -	$ -	$ 57,969	$ -	$ -	$ -
2083	$ -	$ -	$ 52,867	$ -	$ -	$ -
2084	$ -	$ -	$ 47,931	$ -	$ -	$ -
2085	$ -	$ -	$ 43,181	$ -	$ -	$ -
2086	$ -	$ -	$ 38,638	$ -	$ -	$ -
2087	$ -	$ -	$ 34,325	$ -	$ -	$ -
2088	$ -	$ -	$ 30,259	$ -	$ -	$ -
2089	$ -	$ -	$ 26,456	$ -	$ -	$ -
2090	$ -	$ -	$ 22,929	$ -	$ -	$ -
2091	$ -	$ -	$ 19,688	$ -	$ -	$ -
2092	$ -	$ -	$ 16,738	$ -	$ -	$ -
2093	$ -	$ -	$ 14,080	$ -	$ -	$ -
2094	$ -	$ -	$ 11,714	$ -	$ -	$ -
2095	$ -	$ -	$ 9,632	$ -	$ -	$ -
2096	$ -	$ -	$ 7,822	$ -	$ -	$ -
2097	$ -	$ -	$ 6,271	$ -	$ -	$ -
2098	$ -	$ -	$ 4,959	$ -	$ -	$ -
2099	$ -	$ -	$ 3,866	$ -	$ -	$ -
2100	$ -	$ -	$ 2,969	$ -	$ -	$ -
2101	$ -	$ -	$ 2,245	$ -	$ -	$ -
2102	$ -	$ -	$ 1,669	$ -	$ -	$ -
2103	$ -	$ -	$ 1,220	$ -	$ -	$ -
2104	$ -	$ -	$ 875	$ -	$ -	$ -
2105	$ -	$ -	$ 617	$ -	$ -	$ -
2106	$ -	$ -	$ 426	$ -	$ -	$ -
2107	$ -	$ -	$ 289	$ -	$ -	$ -
2108	$ -	$ -	$ 192	$ -	$ -	$ -
2109	$ -	$ -	$ 125	$ -	$ -	$ -
2110	$ -	$ -	$ 80	$ -	$ -	$ -
2111	$ -	$ -	$ 50	$ -	$ -	$ -
2112	$ -	$ -	$ 31	$ -	$ -	$ -
2113	$ -	$ -	$ 19	$ -	$ -	$ -
2114	$ -	$ -	$ 11	$ -	$ -	$ -
2115	$ -	$ -	$ 7	$ -	$ -	$ -
2116	$ -	$ -	$ 4	$ -	$ -	$ -
2117	$ -	$ -	$ 2	$ -	$ -	$ -
2118	$ -	$ -	$ 1	$ -	$ -	$ -
2119	$ -	$ -	$ 1	$ -	$ -	$ -
2120	$ -	$ -	$ -	$ -	$ -	$ -
2121	$ -	$ -	$ -	$ -	$ -	$ -
2122	$ -	$ -	$ -	$ -	$ -	$ -

Single Discount Rate Development
Present Values of Projected Benefits (Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
2023	$ 975,315	$ 31,667	$ 31,667	$ 0	$ 30,685	$ 0	$ 30,842
2024	1,037,998	34,746	34,746	0	31,614	0	32,100
2025	1,099,294	38,314	38,314	0	32,733	0	33,575
2026	1,159,146	42,164	42,164	0	33,824	0	35,049
2027	1,217,468	46,085	46,085	0	34,712	0	36,337
2028	1,274,208	50,344	50,344	0	35,606	0	37,653
2029	1,328,997	54,988	54,988	0	36,517	0	39,011
2030	1,381,400	59,713	59,713	0	37,235	0	40,184
2031	1,431,236	64,672	64,672	0	37,866	0	41,282
2032	1,478,131	69,562	69,562	0	38,243	0	42,120
2033	1,521,992	75,122	75,122	0	38,779	0	43,146
2034	1,561,969	80,696	80,696	0	39,114	0	43,963
2035	1,597,823	86,224	86,224	0	39,243	0	44,559
2036	1,629,352	91,833	91,833	0	39,245	0	45,016
2037	1,656,213	97,668	97,668	0	39,191	0	45,414
2038	1,677,895	103,377	103,377	0	38,950	0	45,595
2039	1,694,220	109,222	109,222	0	38,641	0	45,695
2040	1,704,724	114,891	114,891	0	38,165	0	45,594
2041	1,709,225	120,492	120,492	0	37,583	0	45,358
2042	1,707,415	125,790	125,790	0	36,841	0	44,916
2043	1,699,213	130,759	130,759	0	35,959	0	44,288
2044	1,684,563	135,773	135,773	0	35,059	0	43,621
2045	1,663,010	140,970	140,970	0	34,179	0	42,961
2046	1,633,918	145,950	145,950	0	33,227	0	42,191
2047	1,597,038	150,903	150,903	0	32,258	0	41,379
2048	1,551,910	155,525	155,525	0	31,217	0	40,452
2049	1,498,366	159,737	159,737	0	30,105	0	39,410
2050	1,436,319	163,562	163,562	0	28,945	0	38,278
2051	1,365,650	166,887	166,887	0	27,731	0	37,047
2052	1,286,356	169,841	169,841	0	26,499	0	35,764
2053	1,198,290	172,321	172,321	0	25,245	0	34,419
2054	1,101,414	174,268	174,268	0	23,972	0	33,017
2055	995,746	175,692	175,692	0	22,693	0	31,575
2056	881,294	175,753	175,753	0	21,315	0	29,961
2057	758,942	174,717	174,717	0	19,896	0	28,252
2058	629,359	173,103	173,103	0	18,509	0	26,551
2059	492,721	170,950	170,950	0	17,164	0	24,872
2060	349,174	168,317	168,317	0	15,868	0	23,229
2061	198,806	165,273	165,273	0	14,630	0	21,636
2062	41,636	161,855	41,636	120,219	3,461	28,732	20,099
2063	0	158,087	0	158,087	0	36,438	18,621
2064	0	153,992	0	153,992	0	34,231	17,205
2065	0	149,605	0	149,605	0	32,072	15,856
2066	0	144,960	0	144,960	0	29,970	14,573
2067	0	140,091	0	140,091	0	27,933	13,359
2068	0	135,032	0	135,032	0	25,966	12,214
2069	0	129,812	0	129,812	0	24,074	11,138
2070	0	124,461	0	124,461	0	22,260	10,130
2071	0	119,004	0	119,004	0	20,527	9,187
2072	0	113,462	0	113,462	0	18,874	8,309

Single Discount Rate Development
Present Values of Projected Benefits (Dollars in Thousands)
(Concluded)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
2073	$ -	$ 107,857	$ -	$ 107,857	$ -	$ 17,304	$ 7,492
2074	0	102,209	0	102,209	0	15,814	6,734
2075	0	96,539	0	96,539	0	14,405	6,034
2076	0	90,867	0	90,867	0	13,076	5,387
2077	0	85,215	0	85,215	0	11,826	4,792
2078	0	79,602	0	79,602	0	10,654	4,246
2079	0	74,051	0	74,051	0	9,559	3,747
2080	0	68,582	0	68,582	0	8,538	3,292
2081	0	63,214	0	63,214	0	7,589	2,878
2082	0	57,969	0	57,969	0	6,712	2,503
2083	0	52,867	0	52,867	0	5,903	2,166
2084	0	47,931	0	47,931	0	5,162	1,862
2085	0	43,181	0	43,181	0	4,485	1,592
2086	0	38,638	0	38,638	0	3,870	1,351
2087	0	34,325	0	34,325	0	3,316	1,138
2088	0	30,259	0	30,259	0	2,819	952
2089	0	26,456	0	26,456	0	2,377	789
2090	0	22,929	0	22,929	0	1,987	649
2091	0	19,688	0	19,688	0	1,645	529
2092	0	16,738	0	16,738	0	1,349	426
2093	0	14,080	0	14,080	0	1,094	340
2094	0	11,714	0	11,714	0	878	268
2095	0	9,632	0	9,632	0	696	209
2096	0	7,822	0	7,822	0	545	161
2097	0	6,271	0	6,271	0	422	123
2098	0	4,959	0	4,959	0	322	92
2099	0	3,866	0	3,866	0	242	68
2100	0	2,969	0	2,969	0	179	50
2101	0	2,245	0	2,245	0	131	36
2102	0	1,669	0	1,669	0	94	25
2103	0	1,220	0	1,220	0	66	17
2104	0	875	0	875	0	46	12
2105	0	617	0	617	0	31	8
2106	0	426	0	426	0	21	5
2107	0	289	0	289	0	14	3
2108	0	192	0	192	0	9	2
2109	0	125	0	125	0	5	1
2110	0	80	0	80	0	3	1
2111	0	50	0	50	0	2	0
2112	0	31	0	31	0	1	0
2113	0	19	0	19	0	1	0
2114	0	11	0	11	0	0	0
2115	0	7	0	7	0	0	0
2116	0	4	0	4	0	0	0
2117	0	2	0	2	0	0	0
2118	0	1	0	1	0	0	0
2119	0	1	0	1	0	0	0
2120	0	0	0	0	0	0	0
2121	0	0	0	0	0	0	0
2122	0	0	0	0	0	0	0
				Totals	$ 1,232,714	$ 454,270	$ 1,686,984

SECTION H

GLOSSARY OF TERMS

Glossary of Terms

Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future benefit payments at predetermined rates of interest to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically, the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

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Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay (meets the statutory salary definition) and does not include pay above any pay cap.
Deferred Inflows and Outflows of Resources	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
Discount Rate or Single Discount Rate	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: 1. The benefit payments to be made while the pension plans’ fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and 2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.
Entry Age Actuarial Cost Method or Entry Age Normal (EAN)	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit age(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

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GASB	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
Fiduciary Net Position	The fiduciary net position is the value of the assets of the trust.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contribution Entities	Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. 68 plan members are not considered non-employer contribution entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

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Total Pension Expense

The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Changes in Benefit Terms
4. Employee Contributions
5. Projected Earnings on Plan Investments
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to the difference between expected and actual measurement of the Total Pension Liability
9. Recognition of Outflow (Inflow) of Resources due to Assumption Changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings in pension plan investments

Total Pension Liability (TPL)

The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL)

The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets

The valuation assets are the plan fiduciary net position used in determining the net pension liability of the plan. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.